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GOAL SETTING, SELF-OBSERVATION, AND GOAL RELATED
INFORMATION: A PERSPECTIVE ON SELF-DIRECTED CHANGE

by



Penelope J. Hayduk

A THESIS

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THE UNIVERSITY OF ALBERTA
FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled GOAL SETTING, SELF-OBSERVATION, AND GOAL RELATED INFORMATION: A PERSPECTIVE ON SELF-DIRECTED CHANGE submitted by Penelope J. Hayduk in partial fulfilment of the requirements for the degree of MASTER OF EDUCATION.

Abstract

This study investigated the effects of goal setting, self-observation, and goal related information on behavior change. The variables were derived from an information processing theory of self-directed behavior change. In addition, the study attempted to minimize the influence of external control which has been a confounding factor in studies investigating self-directed change.

A 2 x 3 pretest, posttest design was used. The pretest served two purposes: it masked the goal setting operations, and it provided covariate data with which to partial out initial group differences. The subjects were 42 adults who responded to advertisements of two stress management workshops.

Analysis of covariance results and practical significance data offered some support for two hypotheses: goal setting plus self-observation produces more change than goal setting alone, or no goal setting; and information in the content area of the goals produces more change than no information. However, goal setting alone did not produce more change than no goal setting; and an ordinal interaction did not occur between levels of goal setting and levels of goal related information.

The results are discussed in terms of theories of self-directed change, as well as in terms of the issue of experimental control of self-control variables.

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1. INTRODUCTION

1.1 Overview

The primary purpose of this study was to assess the effects of goal setting and self-observation on self-directed behavior change. There is substantial evidence that goals, when accepted, produce change (c.f. Duchastel & Merrill, 1973; Steers & Porter, 1974). The fact that goals must be accepted to be effective implies that the individual makes choices which guide or direct his/her behavior. Systems theory suggests that change is the result of information processing (Battista, 1977). Thus, goals may influence behavior change by guiding the individual's selection and processing of information, which, in turn, is used to adjust behavior toward the goal. This study was designed to test three hypotheses derived from the information processing perspective of self-directed behavior change.

Chapter One begins with a brief overview of the thesis. The overview is followed by a brief introduction to the topic of self-directed change, and some definitions.

Chapter Two is a selected review of relevant literature. It starts with a brief presentation of the assumptions of the "mechanistic" and "holistic" paradigms (Battista, 1977). These assumptions provide a basis from which three current models of self-direction are analyzed.

The analysis highlights the roles of goal setting and self-observation in self-direction. Research on goal setting is reviewed, followed by a review of research relevant to self-observation. A brief discussion of the issue of self vs. external control follows. The chapter concludes with a summary and the hypotheses.

Chapter Three, "Method", reviews the experimental procedures employed in the study.

Chapter Four, "Results and Discussion", presents the preliminary pretest analysis and the correlations between the dependent measures at pretest. Analyses of the posttest data are then presented in terms of the answers they provide to the research hypotheses. The findings are summarized and the limitations of the study are discussed. Finally, implications for future research are presented.

1.2 Introduction

Several writers argue that self-direction is a crucial process in psychotherapy and suggest that no change occurs without the participation of the client (Kanfer, 1977; Watson & Tharp, 1977). The argument suggests that an understanding of self-direction processes may be important in the facilitation of successful therapy and behavior change.

Historically, self-direction (alternately called self-control, self-regulation, self-management) was thought

to be an inherent personality characteristic, but more recently, it is understood to be a set of learnable skills (Mahoney & Thoresen, 1974; Thoresen, Kirmil-Gray & Crosbie, 1977). Self-direction is characterized by conscious effort to change or guide one's own behavior. This conscious effort was thought to be the personality characteristic called willpower (c.f. Frankl, 1959). In practice, however, the development of self-direction involved intensive training by family and religious groups. Thoresen, Kirmil-Gray, and Crosbie (1977) suggest that Skinner was the first person to propose that an individual might learn to control the sources of influence in the environment, and thus control his own behavior. In the late 1960's and 1970's, Skinner's conception of self-direction as a learnable skill was taken up and elaborated by many writers (c.f. Kanfer, 1977; Kanfer & Karoly, 1972; Mahoney & Thoresen, 1974; Thoresen, Kirmil-Gray & Crosbie, 1977). During the 1970's three models (described at length in Chapter 2) were proposed as explanations of the self-direction process: Kanfer's Self-Regulation Model, Bandura's Self System, and Thoresen, Kirmil-Gray and Crosbie's General Model of Self-Control. Kanfer's model has stimulated much research which has supported the importance of the performance criterion (performance standard, or goal) in self-directed change (Greiner, 1974; Greiner & Karoly, 1976; Spates & Kanfer, 1977).

Research from clinical, educational, and industrial psychology also has supported the positive effects of goal setting on behavior change (c.f. Duchastel & Merrill, 1973; Laferriere & Calsyn, 1978; Latham & Yukle, 1975). One factor which has remained confounded in these studies is the role of information feedback about behavior in relation to the goal (c.f. Duchastel & Merrill, 1973; LaFerriere & Calsyn, 1978).

Several studies of self-monitoring (one form of information feedback) have provided evidence that specific goals assigned by the experimenter enhance the effects of self-monitoring on behavior (Baron & Watters, 1981; Kazdin, 1974). This research suggests that information feedback may be an important factor when goals lead to behavior change.

The research reviewed in Chapter Two suggests that self-directed change may involve both the setting of goals and self-observation of behavior in relation to the goals. The present study tested that suggestion by providing subjects with the opportunity, first, to set their own goals and, second, to compare their own behavior to the goals they had set.

1.3 Definitions

Some definitions are provided for frequently used terms in self-direction. These terms have a variety of meanings in the literature. For example, "self-control" is used to refer

to both the general case of self-directed change, and to specific subsets of self-directed change. In order to facilitate clarity, the terms are used as follows within this thesis. The terms are listed in alphabetical order for easy reference.

Criterion is "a standard on which a judgment or decision may be based" (Webster's, 1976, p. 270).

Goal is "the end toward which effort is directed" (Webster's, 1976, p. 493).

Self-control is "self-directed behavior sequences in which a person |experiences| conflict and |takes| actions which initially alter the likelihood of executing a previously highly probable response" (Kanfer, 1977, p.7). Self-control is the first of three phases of self-direction (Thoresen, Kirmil-Gray & Crosbie, 1977). (See Figure 1.1 and "self-direction" below.) It is characterized by increasing proportions of conscious effort to the amount of behavior change. The conflict centers on the choice between short term and long term consequences of alternate behaviors. The crux of self-control is the choice between positive long term consequences which are in conflict with positive short term consequences, thereby requiring much conscious effort.

Self-direction is the guiding or changing of one's own behavior. Thoresen, Kirmil-Gray, and Crosbie (1977) divide self-direction into three phases: self-control, self-management, and self-regulation. Figure 1.1 shows that the three phases of self-direction are characterized by

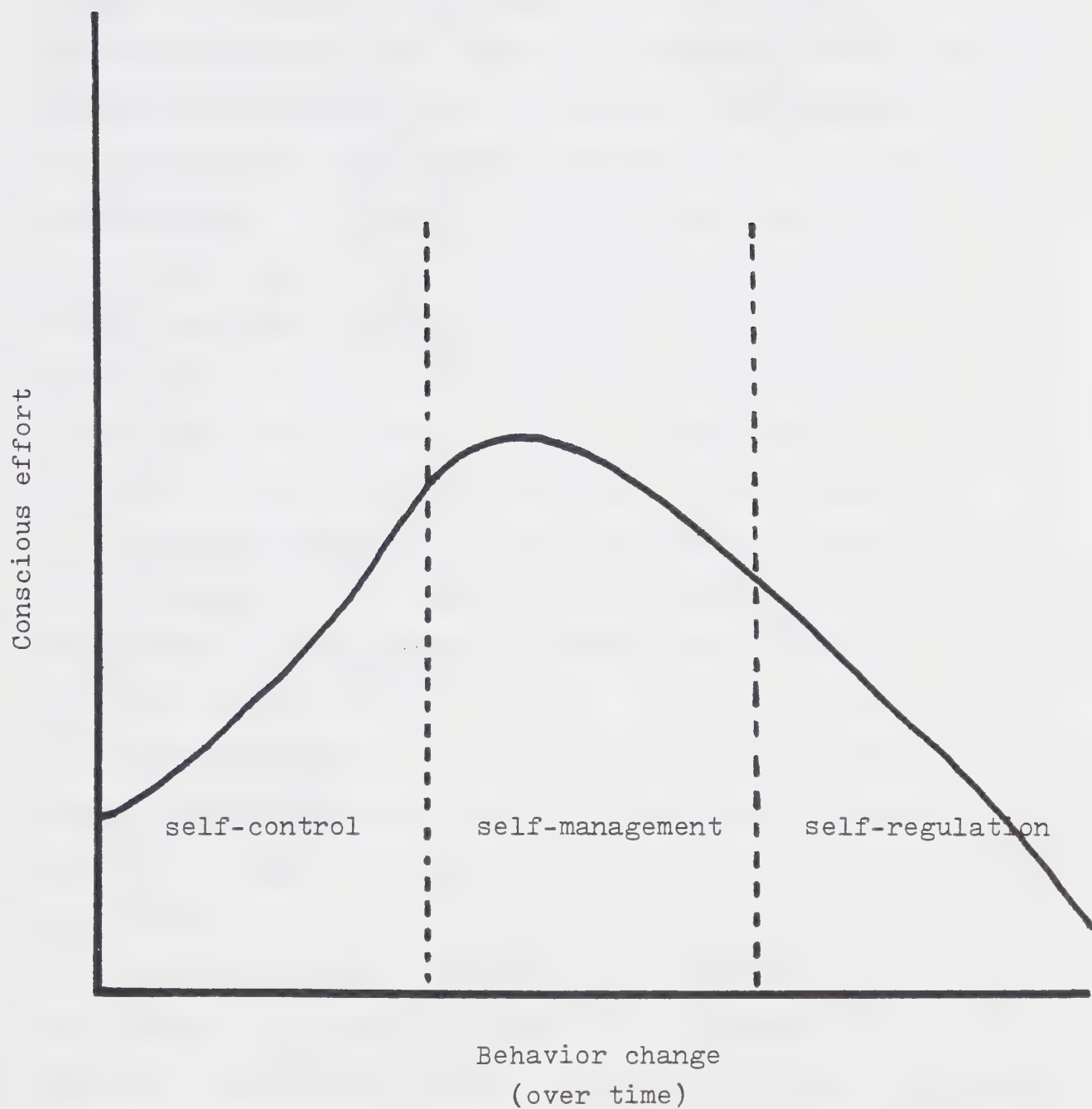


Figure 1.1

Three relative phases of self-change

varying proportions of conscious effort to the amount of behavior change. In addition, self-direction is characterized by the choice of behaviors which may be unsupported by immediate environmental contingencies. The current writer has chosen "self-direction" as the general term because it is used in this way by several writers, including Kolb, Winter, and Berlew (1968), and Thoresen, Kirmil-Gray, and Crosbie (1977). In addition, it avoids confusion with "self-control", "self-management", and "self-regulation", each of which has been used to refer to both the general and specific aspects of self-direction.

Self-evaluation is a "discrimination or judgement about the adequacy of [one's] performance relative to a subjectively held standard or comparison criterion" (Kanfer & Karoly, 1972, p. 406).

Self-management is characterized by diminishing conflict and conscious effort in proportion to the amount of behavior change. In Figure 1.1 it is the second phase of self-direction.

Self-monitoring . Although self-monitoring is defined as "observing one's own behavior" (Kazdin, 1974), it is usually operationalized as counting and/or recording instances of specific behaviors (c.f. Baron & Watters, 1981; Dennis & Mueller, 1981; Kanfer, 1970; Kazdin, 1974; Mahoney, Moura & Wade , 1973). However, sometimes self-monitoring is operationalized without counting and recording (c.f. Spates & Kanfer, 1977). For purposes of clarity, self-monitoring

will be used here to refer to self-observation which includes counting and recording.

Self-observation is defined here as observing one's own behavior. It does not include counting and recording.

Self-regulation is the third phase of self-direction (see Figure 1.1). Self-regulation represents the stabilizing of effort. It is the most common phase of self-direction, because most self-directed behavior requires little conscious effort or conflict. During this phase, biological and social variables are likely to be supporting the self-direction.

Self-reinforcement is the third component of Kanfer and Karoly's (1972) Self-regulation model. An accurate definition of "self-reinforcement" is the self-presentation of a stimulus, or the self-removal of a stimulus, either of which increase the occurrence of the preceding behavior. It is important to note, however, that within the Kanfer and Karoly model, "self-reinforcement" includes both self-reinforcing and self-punishing events.

2. LITERATURE REVIEW

2.1 Overview

Chapter two begins with a review and discussion of self-direction theory and research, focussing on the role of goal setting in self-directed change. Goal setting studies are reviewed and discussed, noting the role of goal acceptance, and the possible role of information feedback in goal setting effects. Finally, self-observation studies are reviewed and discussed in terms of the role of information feedback in self-directed behavior change.

2.2 Self-directed Behavior Change

This section reviews three current models of self-directed change. It begins with a brief description of the "mechanistic" and "holistic" paradigms, which provide a framework within which to discuss the models of self-direction. The underlying assumptions of the models and their implications are discussed. It is suggested that an information processing perspective of self-directed change has more explanatory power than does a behavioral perspective.

2.2.1 The Paradigms

Battista (1977) suggests that three general theoretical paradigms have guided man's understanding of reality. The first was the "vitalistic" paradigm. Within the "vitalistic" paradigm knowledge was based on subjective experience only, and reality was believed to include a non-localized life force which brought about change. Vitalism was replaced by the "mechanistic" paradigm in the 19th century because mechanism provided a better explanation of biological phenomena. Battista (1977) argues that the "mechanistic" paradigm is currently being replaced by the "holistic" paradigm, again because of the better explanatory power of the holistic paradigm. The mechanistic and holistic paradigms are presented briefly below. The reader is referred to Battista (1977) for a more extensive discussion.

Within the mechanistic paradigm events at one level of organization are explained by reducing them to a lower order of complexity. The assumptions of mechanism are:

1. Reality is divided into "matter-energy and space-time" (Battista, 1977, p. 65);
2. Truth is objective;
3. Matter is passive and is driven by energy "in a totally determined manner" (p. 65).

Although the deterministic causality of mechanism provided a better explanation of biological phenomena than did vitalism, it provided no explanation of "the apparent purposiveness of organisms" (Battista, 1977, p. 66).

The ability to explain "purposive behavior without postulating more than one kind of force" (as in vitalism) is one of the advantages of the holistic paradigm (Battista, 1977, p. 66). The assumptions of holism are:

1. Reality is an interconnected system.
2. Truth is the interaction between inner (subjective) and outer (objective) realities.
3. Stability is maintained by the structure of the system. Change is the "transformation of a system as the result of information processing" (emphasis mine) (Battista, 1977, p. 66)

The holistic paradigm acknowledges both objective and subjective reality, and by assuming their interactive nature, provides the basis for understanding the relativistic and probabilistic occurrence of events.

2.2.2 Three Theoretical Models

The three current models of self-direction are: Kanfer and Karoly's (1972) "Self-regulation" model; Bandura's (1978) "Self System"; and Thoresen, Kirmil-Gray, and Crosbie's (1977) "Working Model" of self-direction. These models display the general, ongoing transition from the "mechanistic" paradigm to the "holistic" paradigm (Battista, 1977). The assumptions underlying the paradigms and models provide a basis from which to consider the role of goal setting in self-direction.

2.2.2.1 The Kanfer et al. Self-regulation Model

Kanfer and Karoly (1972) propose a three-stage model of self-direction, including self-monitoring, self-evaluation, and self-reinforcement. See Figure 2.1. This model has stimulated much research and discussion, perhaps because of its apparent simplicity. Kanfer and Karoly (1972) hypothesize that when behavior chains do not progress smoothly, self-monitoring occurs. The individual then makes a judgement (self-evaluation) about the performance relative to his subjective criterion or standard. Based on this comparison, the individual then reinforces or punishes himself (self-reinforcement, according to the model). Kanfer and Karoly (1972) suggest that self-control is a subset of self-direction in which a performance criterion or contract is made explicit, either within the individual, or between individuals.

A primary assumption of Kanfer and Karoly's model (and of the other models presented) is that self-direction is learned. This assumption appears to be well supported by experimental data (Dennis & Mueller, 1981; Greiner, 1974; Heffernan & Richards, 1981; Kanfer, 1977; Martin, 1979; O'Leary & Dubey, 1979; Pressley, 1979; Rosenbaum & Drabman, 1979; Spates & Kanfer, 1977).

Several problematic assumptions underly Kanfer and Karoly's model. Each of these assumptions results from the fact that the model was based on the operant learning paradigm.

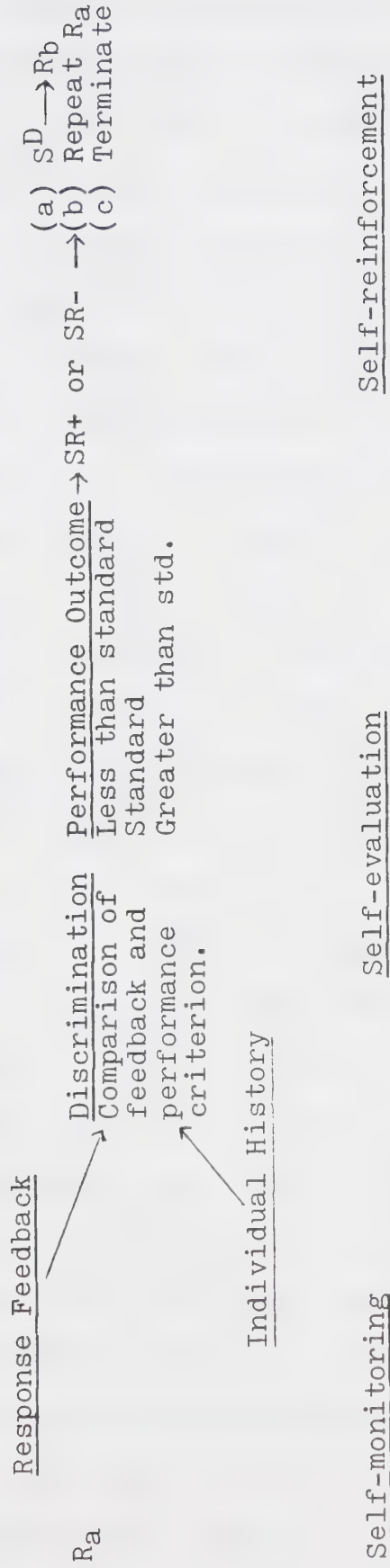


Figure 2.1 Self-regulation Model adapted from Kanfer and Karoly (1972).

The first assumption is that self-consequences are the motivators of self-directed behaviors. Experimental data have tended not to support the efficacy of self-reinforcement as the motivator of improved performance in self-direction. Three studies have examined components of the three-stage model (Greiner, 1974; Mahoney, Moura & Wade, 1973; Spates & Kanfer, 1977). Greiner (1974) examined the self-monitoring; self-monitoring plus self-reinforcement; and self-monitoring, self-reinforcement, plus planning components of the model. (Planning included training in setting criteria for scheduling work and attaching contingencies for successfully completed tasks.) He found that neither self-monitoring alone, nor self-monitoring plus self-reinforcement significantly influenced performance outcomes. Spates and Kanfer (1977) compared self-monitoring, criterion-setting, self-monitoring plus criterion-setting, and self-evaluation plus self-reward. This study also did not support the practical importance of the self-reward component. (Both studies did, however, find that criterion-setting improved performance.) Mahoney, Moura, and Wade (1973) examined the relative efficacy of self-reward, self-punishment, and self-monitoring on self-directed weight loss. They found that self-reward produced more weight loss than either self-punishment or self-monitoring. It is important to note that in the Mahoney et al. study there was no comparison with a criterion-setting group. Martin (1979) reviewed 53 empirical studies of self-reinforcement and

found only two which supported the motivational function of self-reinforcement. Thus, the experimental data suggest that self-reinforcement is not the primary motivating factor in self-direction.

A second implicit assumption of Kanfer and Karoly's (1972) model is that self-direction is a sequential, non-interactive process. This is not at first obvious since Kanfer (1977, p. 5) writes that any behavior is the result of the dynamic interaction of "situational (alpha), self-generated (beta) and biological (gamma) variables." In addition he writes,

a) no event is likely to be under total control of only one set of variables, and b) these influences constantly interact and moderate the final effect.

(p. 6)

Although Kanfer makes numerous references to the dynamic interaction of variables, the model excludes situational and biological variables and their interaction in self-regulation. In addition, the model does not include the interactions of the self-generated (self-direction) variables. (See Figure 2.1.) In providing a simplified, sequential model of self-direction, Kanfer and Karoly have prevented the study and understanding of the dynamic interactions and relationships in self-direction which he so richly describes elsewhere.

A third assumption is the implicit criterion, standard, or contract, which is necessary for self-evaluation. Greiner

(1974), Kanfer (1977), Kanfer, Cox, Greiner, and Karoly (1974), Kanfer, and Karoly (1972), Seidner (1973), and Spates, and Kanfer (1977) confirm that the single most important component of self-direction is the criterion or contract. This evidence suggests that the setting of a criterion or goal is an essential distinguishable component of self-direction.

To summarize, the Kanfer and Karoly model has stimulated much research and discussion. The evidence arising from the research to date suggests that self-reinforcement may not be essential to self-direction. It also suggests that criterion- or goal setting may be necessary for successful self-direction.

2.2.2.2 The Bandura Self System

Bandura's (1978) conception of self-direction is embedded within his theory of reciprocal determinism. Reciprocal determinism means that "behavior, interpersonal factors, and environmental influences all operate as interlocking determinants of each other" (Bandura, 1978, p. 346). The relative influence of each factor varies from situation to situation. See Figure 2.2.

Within reciprocal determination, the self system refers to cognitive structures [part of P] that provide reference mechanisms and to a set of subfunctions for the perception, evaluation, and regulation of behavior. . .by which people exercise

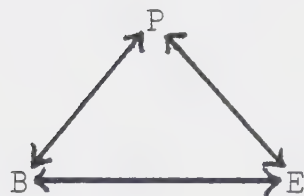


Figure 2.2 A schematic representation of reciprocal determinism. B = behavior, P = cognitive and other internal events that can affect perceptions and actions, E = external environment. (Adapted from Bandura, 1978)

some control over their own behavior (Bandura, 1978, p. 348).

The set of subfunctions involved in self-direction comprises self-observation, judgmental processes, and self-response (see Figure 2.3). Self-observation includes observing one's own behavior on a number of dimensions, such as quality, rate, and frequency. These data provide information which is, in itself, insufficient to guide one's behavior. However, self-observation appears to lead automatically to one or more of the four judgmental processes. Behavior is judged as commendable or dissatisfying by comparing it to 1. personal standards, 2. others' or one's own performances, 3. the value of the activity, and/or 4. one's attribution of responsibility for the behavior. If the behavior is important to the individual, he/she will self-respond either with positive or negative internal events, or with tangible external events. If the behavior is unimportant, the individual will not self-respond.

Bandura's self-direction model appears to be based on a mix of assumptions. The general theory postulates the reciprocal influence of internal, environmental, and behavioral variables. However, within the general theory, self-direction appears to be a three-step sequence.

A second set of inconsistencies centers on the primary motivator of change. On the one hand, Bandura writes that tangible or intangible incentives or gratifications motivate the required effort (Bandura, 1978, p. 350). On the other

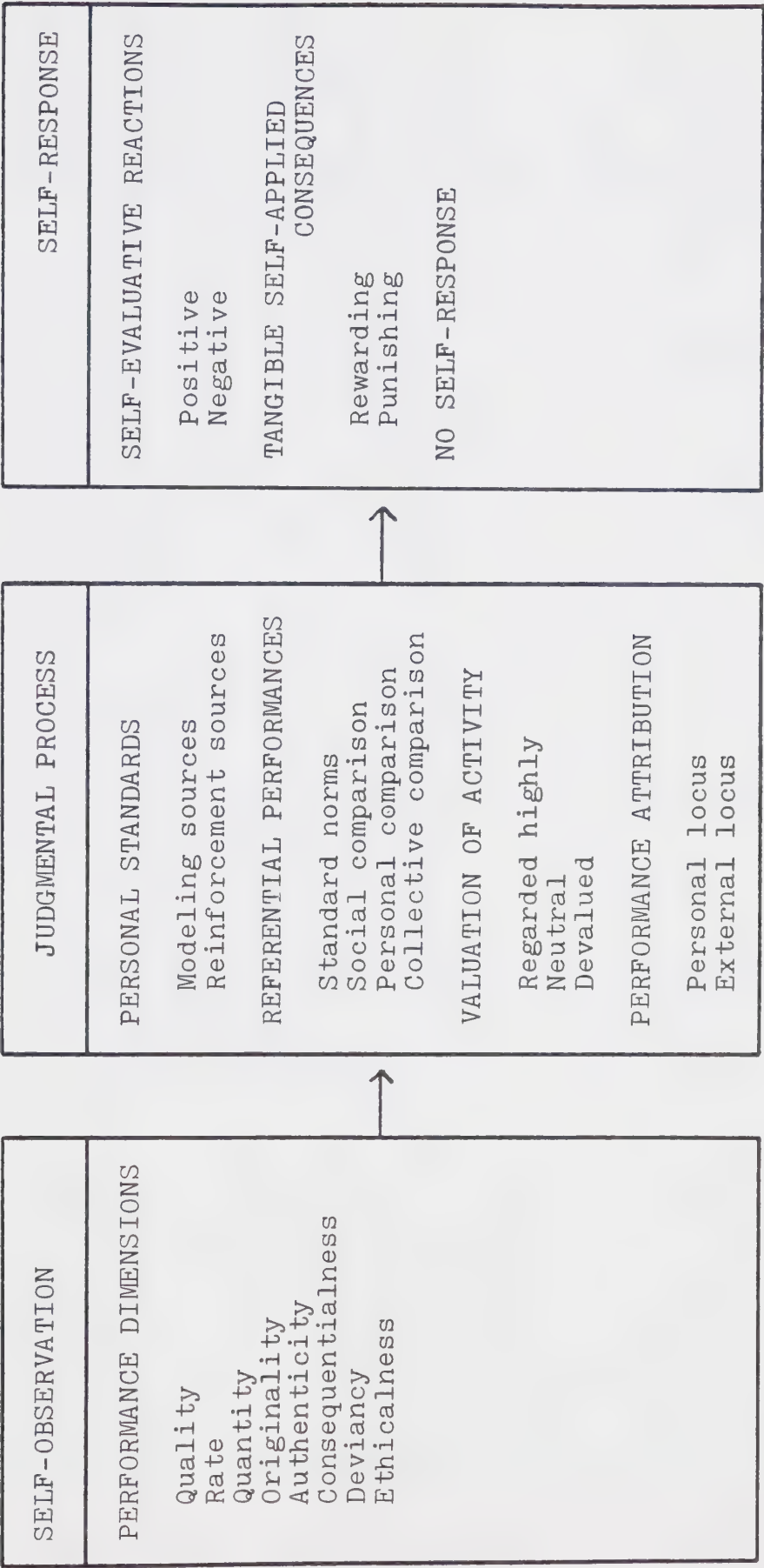


Figure 2.3 Component processes in the self-direction of behavior by self-prescribed contingencies. (From Bandura, 1978)

hand, he writes that people "regulate their choice behavior" (Bandura, 1977, p. 212), their "effort expenditure, persistence and self-guiding thought" (Bandura, Adams, Hardy & Howells, 1980, p. 40) in accordance with the efficacy information which they receive from a variety of sources (information processing). Bandura attempts to reconcile this inconsistency by saying that both incentives and the guiding, selecting, and processing of relevant information contribute to self-direction. The model, however, appears to emphasize self-prescribed consequences since positive or negative self-responses are hypothesized always to follow a self-observation and judgement of behavior which is important to the individual. In addition, goal setting, or a decisional process about the direction in which one chooses to guide his/her behavior, is missing as a process in this model. Although Bandura states that goal setting is an indispensable component of self-direction (Bandura, 1978, p. 351), he does not include it in the model.

These striking inconsistencies appear to this writer to be the result of the influence of Kanfer's model on Bandura's conception of self-direction. Bandura appears to have elaborated Kanfer's model and set it into his theory of reciprocal determinism without carefully considering the implications of the inconsistencies. Thus, in Bandura's model self-direction is still essentially a hedonically motivated, unidirectional process, in the midst of a general theory which assumes reciprocal interaction and primacy of

information processing.

2.2.2.3 The Thoresen et al. Working Model

Thoresen, Kirmil-Gray, and Crosbie (1977) propose a general model of self-direction (see Figure 2.4). Their self-control process starts with identification of a problem or goal, which includes: a) recognition that a problem exists; b) a conscious decision to work on solving the problem; c) examination of one's beliefs, expectations for change, attributions about causes, and self-evaluations; d) identifying the feelings associated with a problem; and f) self-observation. The second step is assessing and building commitment. This step includes both the intention to change plus engaging in action to bring about change. The third step is becoming aware of one's own behavior patterns, which involves accurate observation and recording of one's behavior. Fourth, developing an action plan is deciding on the particular goal or problem, observing behavior, generating strategies for use in changing the behavior, evaluating the strategies, and deciding which to try. The fifth step is implementing the plan. The sixth step is self-observation (i.e. comparing performance to a standard or goal). Thus, one must be aware of one's standard or goal, carefully observe one's own behavior, and compare it to the standard. Thoresen, Kirmil-Gray, and Crosbie (1977) emphasize the dynamic interaction of the steps in self-control, as well as the continual interaction of

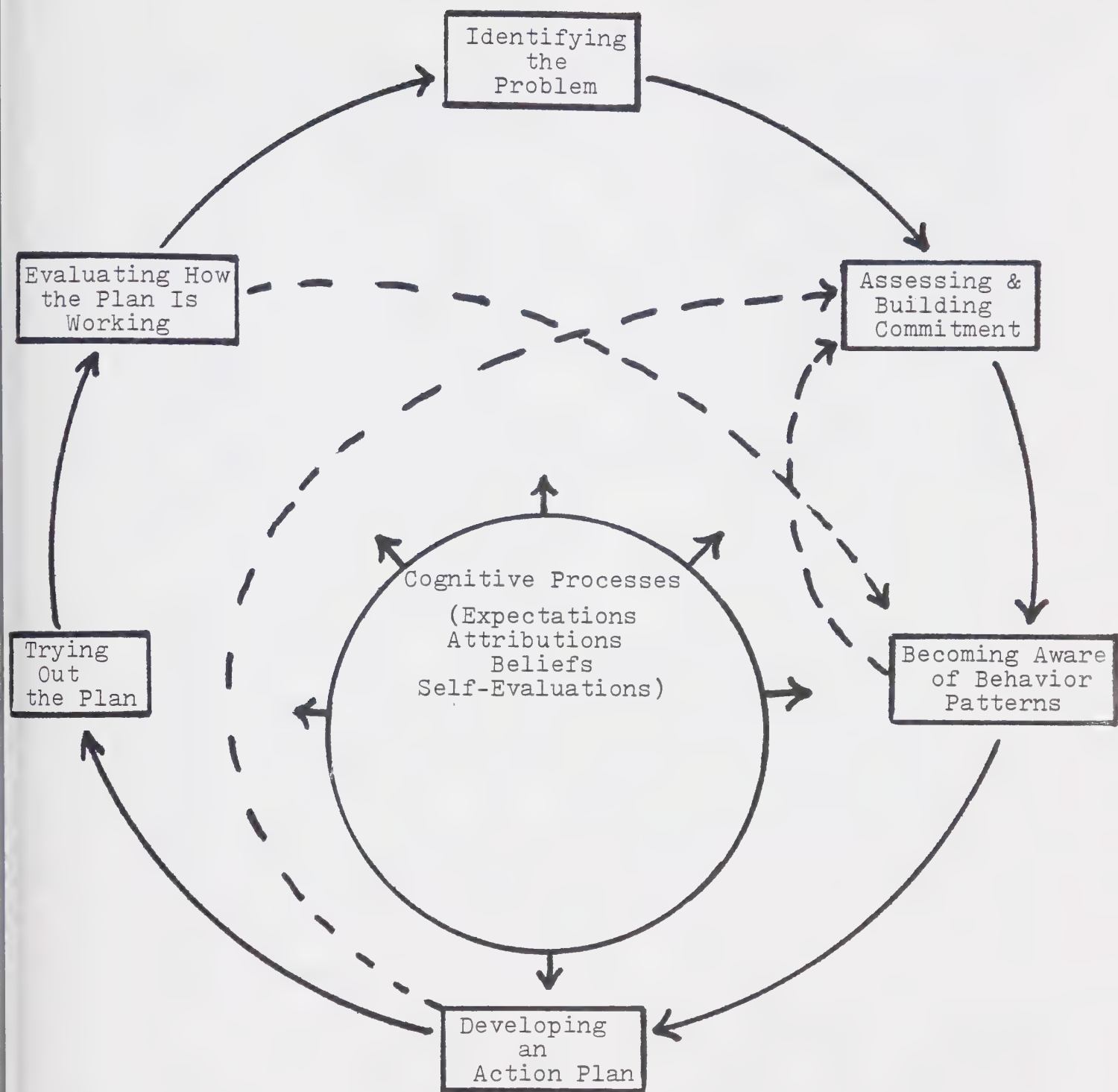


Figure 2.4

A general working model of self-control
(From Thoresen, Kirmil-Gray, and Crosbie,
1977)

cognitive processes such as expectations, attributions, beliefs, and self-evaluations.

The Thoresen, et al. (1977) model depicts self-direction as potentially involving many strategies, depending on the problem or goal. This notion is supported by Perri and Richards' (1977) study of naturally occurring episodes of self-direction. They found that individuals who were successful in self-direction used more techniques over a longer time, and that particular methods distinguished success for particular problems.

The assumptions underlying the Thoresen, et al. (1977) model appear to be consistent with the "holistic" paradigm. Self-direction is clearly represented as a reciprocally interactive process which occurs through the interaction of internal (subjective) and external (objective) events. The guiding, selection, and processing of information is emphasized and suggests that information processing is the primary determiner of behavior change.

2.2.2.4 Summary of the Models

The three current self-direction models were reviewed within the framework of the "mechanistic" and "holistic" paradigms. The "holistic" paradigm appears to offer a better set of assumptions upon which to base an explanation of self-direction than does mechanism. The evidence comes from both theory and research. Self-direction theory appears to have evolved from Kanfer's unidirectional, behavioral model

to Thoresen, et al.'s interactive, information processing model. Component analysis research of the Kanfer model suggests that the single important factor in self-direction is criterion- setting. When viewed from the "holistic" paradigm, the salient characteristics of criteria become their goal characteristics. Thus, the importance of the criterion (goal) makes sense when (from a systems perspective) we assume that change occurs through information processing: the goal guides the selection and processing of information. This view appears to be supported by other writers (Kolb, Winter & Berlew, 1968; Locke, 1980).

2.3 Goal Setting

This section reviews goal setting research in organizational, instructional, and clinical psychology. Goal setting literature in organizational psychology suggests that specific goals result in higher performance than either not having goals or having general goals (Latham & Baldes, 1975; Latham & Kinne, 1974; Latham & Yukle, 1975; Mossholder, 1980; Terborg, 1976). In addition, difficult goals, when accepted, lead to better performance than easy goals (Campbell & Ilgen, 1976; Mento, Cartledge & Locke, 1980).

Educational research has not led to such clear results. Duchastel and Merrill (1973) conclude in their review that behavioral objectives, which may also be viewed as goals,

facilitate learning under certain circumstances. A major problem in this research has been that subjects have not always understood that the behavioral objectives were the learning goals. These studies contained the implicit assumption that the behavioral objectives were accepted as goals. This assumption could account for the inconclusive results.

Studies of participative vs. assigned goals address the issue of goal acceptance. Most studies have shown no difference in performance between participative and assigned goal setting conditions (c.f. Ivancevich, 1976; Latham & Yukle, 1976). Only one study, with uneducated woods workers, found that participation in goal setting led to the selection of more difficult goals and to higher performances than did an assigned goal (Latham & Yukle, 1975). It must be noted that the above findings rest on the implicit assumption that the goals are accepted by the subjects. This is precisely the problem Duchastel and Merrill (1973) note in their review of the inconclusive effects of behavioral objectives on learning.

Steers and Porter (1974) found that both goal specificity and goal acceptance were consistently related to performance. From their perspective, the distinction between assigned goals and personal levels of aspiration (accepted goals) must be made in both theory and research. Mento, Cartledge, and Locke (1980) present two studies which did distinguish assigned from accepted goals. In the first

study, they found that subjects' expectancies of success and the desirability of the goal (valence) influenced "the degree or probability of acceptance of an assigned goal but had no effect on effort or performance when other factors, such as ability, were controlled" (Mento, Cartledge & Locke, 1980, p. 419). However, both assigned and accepted goals were important determiners of effort in one study, and of both effort and performance in the other. Mento et al. suggest that the differential influence on performance may be due to the difference in the ongoing information provided to the subjects. This will be discussed further in the next section.

Research on Kanfer's model supports the importance of specific goals, but appears not to have addressed the issue of goal acceptance. Seidner (1973), Kanfer, Cox, Greiner, and Karoly (1974), and Kanfer (1977) explore the relationship between contract specificity and self-direction. Seidner (1973) in a study of treatment of poor study habits found that a contract to participate in specified treatment activities promoted greater effort than a contract which specified a long-term amount-of-study-behavior goal. Kanfer, Cox, Greiner, and Karoly (1974), p. 617) found that "a specific statement of procedures and goals [enhanced] tolerance of noxious stimulation." Baron and Watters (1981) found that assigned caloric intake goals led to significant weight reduction, while no goals did not. However, there was no difference

between the high, medium, or low goal groups because they "differed very little in their average daily caloric intake" (Baron & Watters, 1981). This suggests that many subjects did not accept the assigned goal.

The clinical literature on the reactive effects of goals also provides information about the effects of goal setting on behavior change. "Although goal-setting in therapy is widely acclaimed, research on the effects of goal-setting on therapy outcome is sparse" (LaFerriere & Calsyn, 1978). Kiresuk and Sherman (1968) initially developed Goal Attainment Scaling (GAS) in an attempt to use the attainment of individualized client goals as the outcome measure in program evaluation. However, GAS, itself, appeared to influence therapy outcomes (Laferriere & Calsyn, 1978). They compared mutual goal setting using GAS between therapist and client with a no formalized goal condition.

Clients receiving . . . GAS had significantly (a) more positive outcomes as measured by posttests of anxiety, self-esteem, and depression; (b) higher ratings of their own motivation to change; and (c) higher ratings of their own change as a result of therapy (Laferriere & Calsyn, 1978, p. 271)

than did control clients. Luenberger (1972) in her investigation of the "effect of explicit awareness of therapy goals on direction of change" found that clients who established goals exhibited greater anxiety reduction and self-actualization than did clients who did not establish

goals. Galano (1977), and Willer and Miller (1976) found that client participation in goal setting with GAS resulted in greater goal attainment than conditions in which the client did not participate in goal setting.

To summarize the goal setting literature reviewed, several variables have been identified which influence the effect of goal setting on behavior: goal acceptance, goal specificity, and goal difficulty. Goal acceptance is of particular interest, because it implies self-directional processes (i.e. the individual makes choices which guide or direct his/her behavior).

2.4 Performance Feedback in Relation to Goals

It was suggested above that goal setting may be effective because it guides the selection and processing of information, which in turn permits corrective adjustments in behavior to meet the goal. If this is so, performance feedback must play an important role in the self-direction process.

This section reviews research which provides information on the role of performance feedback in self-direction. Self-monitoring, self-observation, monitoring by others, and often events which are labelled 'reinforcement' (c.f. Martin, 1979) are all forms of performance feedback. Self-direction studies, clinical goal setting research, and research on the reactive effect of

self-observation are discussed.

2.4.1 Self-direction Research

Component studies of the Kanfer model of self-direction have tended not to support the practical importance of self-monitoring (Baron & Watters, 1981; Greiner, 1974; Kanfer, 1977; Mahoney, Moura & Wade, 1973; Spates & Kanfer, 1977). Upon reanalysis, however, it is apparent that self-monitoring was both conceptualized in the model and operationalized in the studies as occurring prior to and separate from the performance standard (goal). This ordering and operationalization effectively prevented Kanfer and his colleagues from analyzing the interaction of monitoring and goal setting. The Greiner (1974) study explicitly included monitoring with systematic planning in an add-on design which precluded analysis of the monitoring by plan interaction, and resulted in the attribution (perhaps a misattribution) of the significant result solely to training in planning.

The Spates and Kanfer (1977) study compared training in self-monitoring alone, criterion-setting alone, and self-monitoring plus criterion setting conditions in a mathematics task. The problem in this study is that the operationalization of the criterion-setting, and self-monitoring plus criterion-setting conditions are not sufficiently different to make it possible to interpret them as two separate operations. The similarity of the two

conditions, alone, may account for the results which showed no difference between the two conditions. The results may in fact be attributable to the interaction of the criterion and monitoring rather than to criterion-setting alone.

In summary, the lack of support for self-monitoring in the self-direction studies reviewed appears to be due: partly to the fact that self-monitoring is conceptualized as occurring prior to the setting of a goal; and partly to the poor operationalization of the independent variables.

2.4.2 Clinical Goal Setting Studies

Self-observation of performance in relation to goals may be a confounding aspect of the clinical studies which have investigated the effect of goal-setting on performance. Several of the studies reviewed are unclear as to whether or not self-observation has occurred (Galano, 1977; Mistilis, 1978; Uhlemann & Weigel, 1977; Willer & Miller, 1976). Luenberger (1972) defined explicit awareness of therapy goals as "keeping a statement of the subject's goal in a conspicuous place, being encouraged in movement toward it, with opportunities for revisions of it." LaFerriere and Calsyn (1978) required therapists to refer to clients' goals throughout therapy. These two studies appear to have included self-observation of performance in relation to goals as part of the goal setting conditions, and appear to have confounded goal setting with the interaction of goal setting and self-observation.

Burton and Nichols (1978) confirm this interpretation. In cases where goal setting is used to enhance the effectiveness of treatment, goals are not only set, but they also provide focus for treatment and are frequently reviewed during the course of therapy. (p. 225)

They compared goal setting using the Behavioral Target Complaints Form (BTCF) with no goal setting. "Explicit goals were set only at the beginning of therapy and checked only at the end" (Burton & Nichols, 1978, p. 225). They found no difference between the groups on outcome measures of satisfaction, and state/trait anxiety. However, progress toward goals was highly correlated with the outcome measures. Their conclusion was that BTCF is a sensitive and non-reactive measure of outcome when administered only before and after treatment. An alternate conclusion is that goal setting alone may not produce behavior change.

One study which purports to compare goal setting without monitoring vs. goal setting with weekly monitoring includes additional weekly goal setting in the monitoring condition, thereby confounding the monitoring condition with revised goals (Hart, 1978).

In summary, the clinical studies reviewed on pages 27 and 28 appear on the surface to support the therapeutic effectiveness of using explicit, accepted goals. However, reanalysis of the studies suggests that self-observation of performance in relation to goals is a confounding factor in

interpretation of the results.

2.4.3 The Reactive Effects of Self-observation

Research into the effect of self-observation on behavior has provided substantial information about the conditions under which performance feedback influences behavior (Abrams & Wilson, 1979; Baron & Watters, 1981; Heffernan & Richards, 1981; Kanfer, 1970; Kazdin, 1974; Nelson & Hayes, 1981; Richards, McReynolds, Holt & Sexton, 1976). Two conditions which appear to be important are the valence of the target behavior, and goals.

An important determinant of the effect of performance feedback appears to be the valence of the target behavior (Abrams & Wilson, 1979; Kazdin, 1974; Sieck & McFall, 1976). The valence of a behavior is the degree to which it is considered a positive, negative, or neutral behavior. When the valence is positive, performance feedback leads to an increase in the behavior. When the valence is negative, performance feedback leads to a decrease in the behavior, and when the valence is neutral, performance feedback leads to no change in behavior. This relationship exists whether the feedback is via self-observation and/or monitoring (Abrams & Wilson, 1979; Kazdin, 1974; Sieck & McFall, 1976), or via other-observation provided that the information is given to the subject (Kazdin, 1974; Sieck & McFall, 1976).

Positive or negative valences appear to this writer to represent general 'more of' or 'less of' goals, while

neutral valence may represent 'no' goal. Mento, Cartledge & Locke (1980) take a slightly different view and suggest that valence may influence the acceptance of, or choice of a personal goal. Thus, valence (desirability) of a behavior may represent a general goal (that toward which effort is directed) which may influence the choice or acceptance of a specific personal goal.

Goals, also, influence the effect of performance feedback (Baron & Watters, 1981; Kazdin, 1974). Locke, Cartledge, and Koepfel (1968) concluded, in their review of studies of knowledge of results, that goals account for the effects of performance feedback, whether the feedback is via self- or other observation. Kazdin (1974b) suggests that a goal may contribute more to self-directed behavior change than does feedback. Kazdin (1974) provided evidence that a specific assigned goal enhances the effect of performance feedback of a positively valenced behavior. Baron and Watters (1981) also found that a specific assigned caloric intake goal enhanced weight loss by self-monitoring subjects.

In summary, self-observation appears to influence behavior when the behavior is valued either positively or negatively, and when a goal is set and accepted.

2.4.4 Summary of Performance Feedback

Performance feedback appears to be an important aspect of behavior change. Studies of self-directed change and goal setting have tended to confound the influence of performance feedback with goal setting. However, studies of self-monitoring point clearly to an interactive influence between goals and performance feedback in behavior change. When an individual sets his/her own goal and provides his/her own performance feedback, it seems reasonable to assume that he/she is engaging in self-directed change behavior.

2.5 Externally-directed, or Self-directed Change?

Although much of the literature reviewed has been addressed to self-directed change, only one study permitted some self-direction in that subjects were asked to set their own goals "relevant to their behavior in the T Group" (Kolb, Winter & Berlew, 1968, p. 459). The balance of the experimental studies were more accurately studies of experimenter direction. Goals, or performance standards were assigned by the experimenter. Valences were manipulated by the experimenter. When self-observation occurred, the experimenter was there or collected the recorded data. Thus conclusions which have been drawn about self-directed change must be qualified by the fact that the variables have been externally controlled. Several other writers have raised

this issue as well (Martin, 1979; Mossholder, 1980). In fact, Nelson and Hayes (1981) go so far as to propose that self-direction does not occur. They suggest that all the events and objects surrounding self-monitoring serve as cues for "the ultimate environmental consequences contingent on the target behavior" (p. 10).

In order to increase confidence that self-direction does occur and that the variables in question are components of self-direction, it will be necessary to conduct studies which minimize the demand aspects.

2.6 Summary of the Review

This chapter reviewed models of self-direction, goal setting research, and performance feedback research from the perspective of systems theory. The review suggests that an information processing perspective offers a parsimonious explanation of research on self-direction. Also, self-direction as information processing offers a parsimonious explanation of goal setting effects on performance. Goal setting guides the selection and processing of information which is used to adjust behavior towards the goal. One class of information is performance information, which may be obtained by self-observation of behavior. Another class of information is information about skills and strategies required to reach the goal.

2.7 The Hypotheses

The present study is designed to test the information processing perspective of self-direction. The primary assumption is that self-directed change is the result of information processing. Self-direction is hypothesized to involve the setting of goals which guide the selection of both performance information and information about skills and strategies required to reach the goal.

The specific hypotheses tested with respect to adults' management of stress are:

1. a) Explicit goal setting plus observation of behavior in relation to the goal produces more, desirable behavior change than does goal setting alone or no goal setting.
1. b) Explicit goal setting produces more, desirable behavior than no goal setting.
2. Information in the content area of the goals produces more change than no information.
3. There will be an ordinal interaction between levels of goal setting and levels of information available.

3. METHOD

3.1 Design

The study is a 2 x 3 pretest-posttest experimental design. Figure 3.1 displays the 2 x 3 factorial aspect of the design at posttest. The independent variables are workshop participation, and goal setting plus self-observation.

Figure 3.2 is a schematic representation of the study which displays the pretest-posttest aspect of the design. All subjects received the pretest dependent measures. Then groups 1, 2, and 3 received a stress management workshop. Six weeks later, all subjects received the posttest measures, which completed the study. Groups 4, 5, and 6, then, received a stress management workshop.

The design was chosen for two reasons: it permitted the use of analysis of covariance to statistically control possible initial differences between the groups, and it masked the goal setting condition. A .05 alpha level was used to define statistical significance between the groups at posttest. Practical significance was assessed by subjects' reports of whether or not a significant behavior change occurred.

| | | GOALS | | |
|----------------------------------|-------------|----------------------------|------|---------|
| | | Goal + Self Observation | Goal | No Goal |
| STRESS MANAGEMENT WORKSHOP | Workshop | 1 | 2 | 3 |
| | No Workshop | 4 | 5 | 6 |

Figure 3.1 The 2 x 3 factorial design, showing the independent variables, Levels of Goal setting, and Workshop participation.

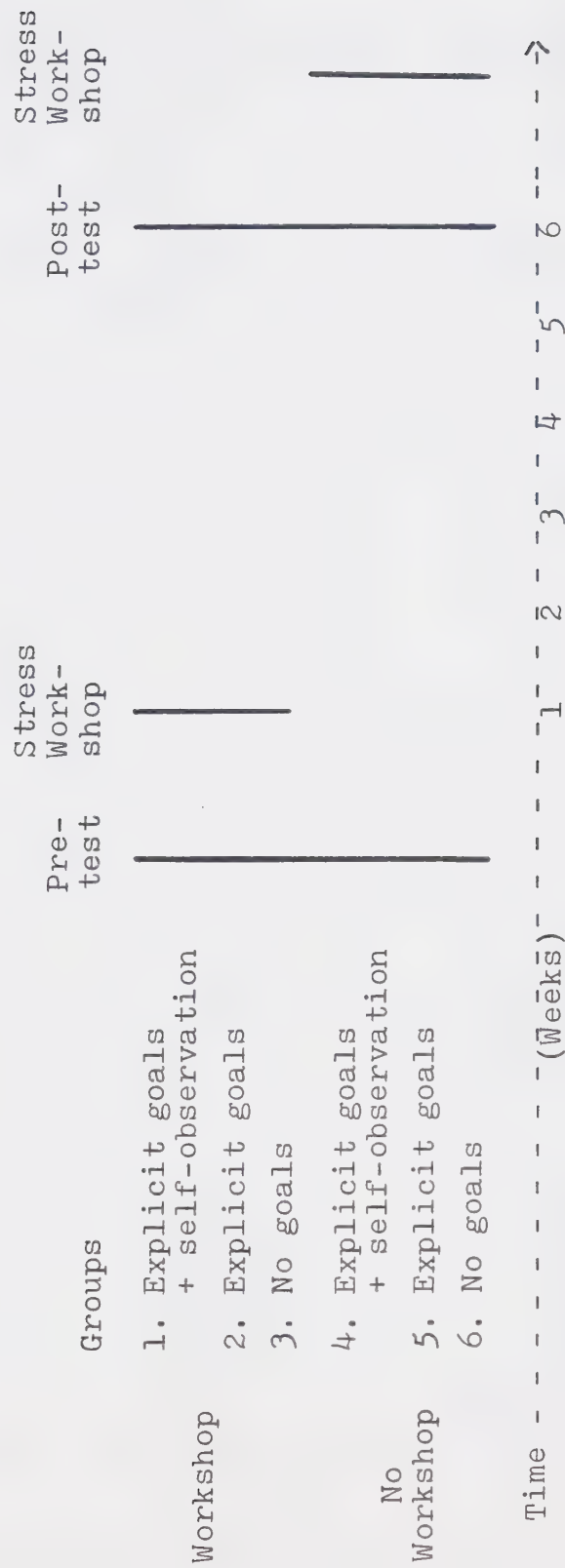


Figure 3.2 A schematic representation of the study.

3.2 Subjects

The subjects were 48 adults, 34 females and 14 males, who registered in one of two stress management workshops. The subjects ranged in age from 20 to 61. Their occupations included, student (graduate and undergraduate), homemaker, accountant, bookkeeper, pharmacist technician, computer operations supervisor, drafting supervisor, word-processing operator, library technician, speech-language pathologist, electrical engineer, teacher, radiology instructor, executive secretary, clerk, court deputy administrator, bank employee, secretary, switchboard operator, counsellor.

Six subjects were lost from the study (two from each of groups 1, 2, and 3), because they were unable to attend the first stress management workshop. Of these, one couple did not participate because the husband died from his third heart attack. One couple did not participate because of "something else" happening during the weekend of the workshop. One female did not participate because she was visiting a seriously ill aunt out of town the weekend of the workshop, and one did not participate because she was unable to arrange babysitting for her young child. This left 42 subjects: six in each of groups 1, 2, and 3; eight in each of groups 4, 5, and 6. The subjects appear to be representative of adults seeking assistance in behavior change.

The subjects selected which workshop they would attend. (Although the experimenter originally planned to randomly

assign subjects to the two workshops, this proved to be practically impossible with adults from the general population.) Within these two groups, subjects were randomly assigned to one of three conditions: No goal, explicit goal, or explicit goal plus self-observation.

3.3 Independent Variables

The independent variables in the study were levels of goal setting, and levels of goal-related information.

3.3.1 Goal Setting

The goal setting independent variable included three levels: No goals, Explicit goals, and Goals plus self-observation. The two No goals groups (3 and 6) did not receive any goal setting instructions.

The two Explicit goals groups (2 and 5) received goal setting instructions only. Goal setting was operationalized by asking the subjects to complete a goal scale. The instructions were typewritten. Both the instructions and the goal scale were enclosed with the pretest measures. The subjects were asked to select a high frequency symptom of stress. Then they were asked to set a general goal related to the symptom. The final steps required that they provide descriptors for a five-point scale. See Appendix A for the goal setting instructions.

The two Goal plus self-observation groups (1 and 4) received the same goal setting instructions as the Explicit goals groups. In addition these subjects were requested to complete a second copy of the goal scale, place it in a frequently visible spot and regularly compare their behavior to their goal. See Appendix A for the self-observation instructions.

3.3.2 Goal-related Information

Information regarding stress management was provided to the subjects in a two-day weekend workshop. The workshop was prepared and delivered by Dr. Allan W. Hayduk, an experienced professional in the field of stress management. The workshop was conducted in a conference room (Gold Room) in a residential and conference facility (Lister Hall) on the University of Alberta campus. The room was equipped with comfortable chairs, tables, overhead projector, screen, and blackboard. Coffee and tea were provided. The workshop provided information about the nature of stress, and about specific and general skills for changing one's stress response. See Appendix C for an outline of the stress workshop.

3.4 Dependent Measures

The dependent measures were the State-Trait Anxiety Inventory (Spielberger, Gorsuch & Lushene, 1970), the Symptoms of Stress Inventory (Leckie & Thompson, 1979); Goal Attainment Scaling (Kiresuk & Sherman, 1968), and the subject's estimate of change in his/her response to stress.

3.4.1 State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory (STAI) was used as a dependent measure for three reasons. When used as a measure of therapeutic outcome, Burton and Nichols (1978) found the STAI A-state scale to be correlated .85 with degree of attainment of goals, and the A-trait scale, .71 with degree of attainment of goals. In addition, Dreger (in Buros, 1978) describes the STAI as a well researched and standardized instrument. Also, it was anticipated that the STAI scales would correlate with the Symptoms of Stress Inventory.

The STAI is a questionnaire consisting of a 20-item trait scale (general anxiety) and a 20-item state scale (anxiety at the time of assessment). Spielberger, Gorsuch, and Lushene (1970) report test-retest reliability from .73 to .86 at one hour, 20 days, and 104 days on the trait scale (undergraduate college students). The test-retest reliabilities for the state scale over the same periods and same subjects ranged from .16 to .54. These low correlations would be expected on a scale which is designed to reflect situational factors. Cronbach's alpha K-R20 coefficients of

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internal consistency for the state and trait scales ranged from .83 to .92.

Spielberger, Gorsuch, and Lushene (1970) report the concurrent validity of the trait scale with IPAT Anxiety scale at .75, .76, and .77 for college females, college males, and patients respectively; with the Taylor Manifest Anxiety Scale (TMAS) at .80, .79, and .83 respectively; and for the Affect Adjective Checklist (AACL) at .52, and .58 for college females and college males. Validity data for the STAI A-state scale is provided by Cronbach's alpha coefficients for 197 college undergraduates under four levels of stressful conditions. These coefficients range from .89 to .94.

Dreger (in Buros, 1978) suggests that the main limitation of the STAI is its fakability. Steps taken to minimize faking in the present study were: anonymous completion of the scales in the subject's own home; the subjects and workshop leader were blind to the experimental conditions; the subjects were blind to the variables which were being manipulated.

3.4.2 Symptoms of Stress Inventory

The Symptoms of Stress Inventory (SOS) was used as a dependent measure to provide data on the number and frequency of stress-related symptoms. The SOS is a 94-item questionnaire, composed of ten stress symptom subscales: peripheral, cardiopulmonary, neural, gastrointestinal,

muscle tension, habit patterns, depression, anxiety, anger, and cognitive disorganization. Subjects rate each item on a scale from 0 (never) to 4 (very frequently). Reliability and validity data are unavailable on the current (1978) revision of the SOS, although descriptive validity and measures of internal consistency are provided for the previous version of SOS (Leckie & Thompson, 1979).

3.4.3 Goal Attainment Scaling

Goal Attainment Scaling (GAS) was used as a dependent measure to assess the degree of attainment of goals. GAS is a technique for setting individualized goals and rating progress toward those goals (Kiresuk & Sherman, 1968). A five-point scale from -2 to +2 is used, and behavioral descriptors are attached to a minimum of two scale points. GAS was originally developed for program evaluation and has been widely used as both an evaluative instrument and a therapeutic technique (LaFerriere & Calsyn, 1978).

Calsyn and Davidson (1978) found the reliability across independent raters for goal attainment to be moderate (.51 to .85). Client rating of goal attainment correlated .73 with the assessment by independent raters. At the present time, there appears to be no adequate validity data on GAS. In view of the reliability data, and the lack of adequate validity data, the present writer agreed with Calsyn and Davidson's (1978) recommendation and included additional dependent measures of goal attainment in the study.

3.4.4 Subject Estimate of Change

The practical significance of the results was assessed by the subjects' yes/no response to the question, "Did your response to stress (i.e. how you respond to stress) improve significantly over the past six weeks?"

3.5 Procedure

The study was conducted during late September to early November, a period which was chosen because it appeared to be minimally affected by significant general holidays or vacation periods. All subjects received the pretest measures and workshop information on September 21, 1981, and completed the measures during the week of September 21 to September 25. The subjects were requested not to discuss the questionnaires with other workshop participants. All subjects received the posttest measures on November 2, 1981 and completed them during the week of November 2 to November 6.

3.5.1 Group 1: Workshop, Goals plus Self-observation

Group 1 was asked to complete and return the STAI, the SOS, and the GAS. They were asked to complete and retain an additional copy of the GAS. They were instructed to place the additional copy in a frequently visible spot (such as the fridge, a mirror, or their desk top), and to use it to facilitate comparison of their actual behavior to their

goal. Group 1 then participated in the stress management workshop (along with groups 2 and 3). Six weeks later, group 1 was asked to complete the STAI and the SOS, and to mark where they would place themselves on the GAS. They were also asked whether or not there had been a significant improvement in their response to stress. This question was included in a brief follow up questionnaire designed to assess whether or not subjects had set goals, and/or had compared their behavior to their goals (see Appendix A).

3.5.2 Group 2: Workshop, Explicit Goals

Group 2 was asked to complete and return the STAI, the SOS, and one copy of the GAS. Group 2 then received the stress management workshop. Six weeks later they completed and returned the same measures as Group 1.

3.5.3 Group 3: Workshop, No Goals

Group 3 was asked to complete and return the STAI, and the SOS. Group 3 then participated in the stress management workshop. Six weeks later they completed and returned the STAI, the SOS, and the practical significance question.

3.5.4 Group 4: No Workshop, Goals plus Self-observation

Group 4 completed the same pretest measures as Group 1. Six weeks later, they completed the same posttest measures as Group 1. They subsequently received a stress management workshop along with Groups 5 and 6. This was not part of the

study and was provided solely for the benefit of the subjects.

3.5.5 Group 5: No Workshop, Explicit Goals

Group 5 completed the same pretest and posttest measures as Group 2. They, then, received the stress management workshop.

3.5.6 Group 6: No Workshop, No Goals

Group 6 completed the same pretest and posttest measures as Group 3. They, then, received the stress management workshop.

4. RESULTS AND DISCUSSION

4.1 Overview

This chapter begins with the preliminary analysis of the pretest data. Next, the relationships between the dependent measures are presented, and are followed by the results and discussion of the primary analyses of the posttest data. The results are then summarized, followed by a discussion of the limitations, and implications of the study.

4.2 Preliminary Analysis of Pretest Data

The study sample included one large occupational group (university graduate students), which comprised one-third of the total sample. No other occupational group was heavily represented in the sample. Therefore, two-tailed T-tests for independent sample means were performed on the pretest measures to determine whether or not there was a significant difference between the students and the non-students. No significant differences were found (see Table 4.1). The author concluded that, for the purposes of this study, there was no reason to consider students separately from other occupational groups.

TABLE 4.1

T-Tests on Pretest Means of Students and Nonstudents

| Dependent Measure | Means | | T | Two Tailed Probability |
|---------------------|--------|--------|-------|------------------------|
| | S | NS | | |
| STAI-X1 | 35.286 | 43.250 | -1.8 | .079 |
| STAI-X2 | 38.643 | 41.714 | - .88 | .382 |
| SOS Total | 49.286 | 55.929 | - .99 | .327 |
| SOS \bar{X} Freq. | 1.827 | 1.721 | .74 | .462 |
| GAS | 2.143 | 1.762 | 1.36 | .185 |

4.3 Relationships Between the Dependent Measures

The relationships between the dependent measures were of interest for several reasons. The STAI A-state and A-trait scales were previously found to be correlated with the degree of attainment of goals using the Behavioral Targets Complaint Form (Burton & Nichols, 1978). It was, therefore, desirable to know whether or not a similar relationship existed between the STAI scales and the degree of attainment of goals using GAS. Also, in view of the reliability and validity data available for GAS (Calsyn & Davidson, 1978), and the lack of reliability and validity data for the SOS, it was desirable to know what relationship existed between these measures and the well-standardized STAI scales.

Pearson product moment correlation coefficients were calculated between the dependent measures at pretest. The results are presented in Table 4.2. Scores on the GAS did not correlate significantly with the total number of symptoms, or with the mean frequency of symptoms as assessed by the SOS. Nor did GAS correlate significantly with the STAI A-state scale. GAS did correlate significantly with the A-trait scale ($r = -0.3747$, $p = 0.025$). This correlation is considerably smaller than Burton and Nichols' (1978) findings using the Behavioral Targets Complaints Form to assess goals. Their correlations were A-State scale, $r = .85$, $p < .01$; A-Trait scale, $r = .71$, $p < .05$. All other dependent measures correlated significantly.

TABLE 4.2
 Pearsons Correlation Coefficients on Dependent Measures
 at Pretest (N=42)

| | X1 | X2 | SOS T | SOS \bar{X} Freq. | GAS |
|---------------------|-----------------|-------------------|-------------------|---------------------|--------------------|
| X1 | 1.0000 p=0.0 | 0.8182 p=0.000 | 0.5881 p=0.000 | 0.4475 p=0.001 | -0.2943 p=0.064 |
| X2 | | 1.0000 p=0.0 | 0.5904 p=0.000 | 0.6215 p=0.000 | -0.3747 p=0.025 |
| SOS Total | | | 1.0000 p=0.0 | 0.5073 p=0.000 | -0.1660 p=0.199 |
| SOS \bar{X} Freq. | | | | 1.000 p=0.0 | -0.1958 p=0.159 |
| GAS | | | | | 1.000 p=0.0 |

4.4 Primary Analyses of the Posttest Data

The data in this section are organized in terms of the answers they provide to the research hypotheses.

4.4.1 Hypothesis 1 a.

Hypothesis 1 a. (Explicit goal setting plus self-observation of behavior in relation to goals will produce more behavior change than goal setting without self-observation.) was unsupported by analysis of covariance of the posttest data using the pretest as the covariate. Tables 4.3, 4.4, 4.5, 4.6, and 4.7 summarize the results of analysis of covariance on each dependent measure.

4.4.2 Hypothesis 1 b.

Hypothesis 1 b. (Explicit goal setting will produce more desirable behavior than no goal setting.) was not supported by the analysis of covariance results. However, the mean frequency of symptoms data tended toward support of this hypothesis ($F = 2.76$, $p = .077$). (See Tables 4.6, and 4.6a.) Analysis of covariance data from the other dependent measures did not support this hypothesis.

4.4.3 Hypothesis 2

Hypothesis 2 (Information in the content area of the goals will produce more desirable behavior change than no information.) was supported by the Trait anxiety scale data. (See Table 4.4). The adjusted cell means were: Group 1,

TABLE 4.3

Summary of Analysis of Covariance of STAI-State Scale

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|---------|----------|-------------|
| Workshop | 1 | 63.312 | 0.727664 | 0.39944 |
| Goals | 2 | 21.926 | 0.252007 | 0.77864 |
| Interaction | 2 | 97.107 | 1.116086 | 0.33894 |
| Covariate | 1 | 735.417 | 8.452364 | 0.00629 |
| Errors | 35 | 87.007 | | |

TABLE 4.4

Summary of Analysis of Covariance of STAI-Trait Scale

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|----------|-----------|-------------|
| Workshop | 1 | 197.450 | 6.917357 | 0.01260 * |
| Goals | 2 | 17.169 | 0.601503 | 0.55355 |
| Interaction | 2 | 21.781 | 0.763076 | 0.47383 |
| Covariate | 1 | 1545.133 | 54.131439 | 0.0 |
| Errors | 35 | 28.544 | | |

TABLE 4.5

Summary of Analysis of Covariance of SOS Number of Symptoms

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|----------|-----------|-------------|
| Workshop | 1 | 105.021 | 0.629818 | 0.43277 |
| Goals | 2 | 116.156 | 0.696598 | 0.50505 |
| Interaction | 2 | 103.516 | 0.620795 | 0.54333 |
| Covariate | 1 | 7137.996 | 42.807022 | 0.00000 |
| Errors | 35 | 166.748 | | |

TABLE 4.6

Summary of Analysis of Covariance of SOS
Mean Frequency of Symptoms

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|-------|-----------|-------------|
| Workshop | 1 | 0.139 | 2.061131 | 0.15998 |
| Goals | 2 | 0.186 | 2.766273 | 0.07667 |
| Interaction | 2 | 0.116 | 1.731050 | 0.19192 |
| Covariate | 1 | 3.761 | 55.927521 | 0.0 |
| Errors | 35 | 0.067 | | |

TABLE 4.6 A

Scheffe Multiple Comparisons of Goal Effects on
SOS Mean Frequency of Symptoms

| | F-Value | Probability |
|-----------------------|---------|-------------|
| Goal + Obs. - Goal | 0.82974 | 0.4446 |
| No Goal - Goal | 2.76050 | 0.0771 |
| No Goal - Goal + Obs. | 0.56800 | 0.5718 |

TABLE 4.7

Summary of Analysis of Covariance of GAS

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|-------|----------|-------------|
| Workshop | 1 | 0.006 | 0.009035 | 0.92510 |
| Goals | 1 | 0.429 | 0.619587 | 0.43924 |
| Interaction | 1 | 0.429 | 0.619587 | 0.43924 |
| Covariate | 1 | 0.010 | 0.015056 | 0.90344 |
| Errors | 23 | 0.692 | | |

10.159; Group 2, 6.212; Group 3, 8.933; Group 4, 13.744; Group 5, 13.669; and Group 6, 11.259. However, hypothesis 2 was unsupported by analysis of covariance results from the other dependent measures.

4.4.4 Hypothesis 3

Hypothesis 3 (There will be an ordinal interaction between between levels of goal setting and levels of information available.) was not supported. (See Tables 4.4 to 4.7.)

4.4.5 Practical Significance

Practical significance was assessed by the subjects' Yes/No responses to the question, "Did your response to stress . . . improve significantly over the past six weeks?" The data are presented in Table 4.8, and are graphically displayed in Figure 4.1, as the percentage of subjects in each group who reported a significant improvement in their response to stress. The practical significance data supported Hypothesis 1 a., and Hypothesis 2. Sixty-seven percent of the subjects who both set goals and self-observed, and attended the workshop (Group 1) reported significant improvement. Fifty percent of the subjects who set goals and self-observed, but did not attend the workshop (Group 4) reported significant improvement. Fifty percent of the balance of the subjects who attended the workshop (both those who set goals, Group 2, and those who did not set

TABLE 4.8
Subjective Estimates of Change

| | Goal + Self Obs. | | Explicit Goal | | No Goal | |
|-------------|---------------------|----|------------------|----|------------|----|
| | Yes | No | Yes | No | Yes | No |
| Workshop | 4 | 2 | 3 | 3 | 3 | 3 |
| No Workshop | 4 | 4 | 2 | 6 | 2 | 6 |

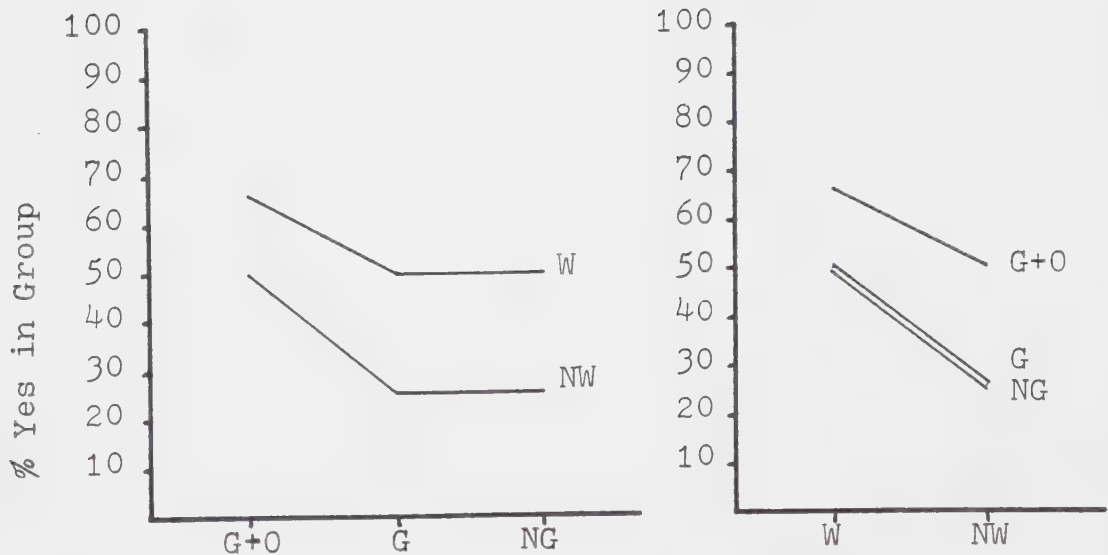


Figure 4.1 The percentage of subjects in each group who reported a significant improvement in their response to stress.

goals, Group 3) reported significant improvement. Twenty-five percent of the balance of the subjects who did not attend the workshop (both those who set goals, Group 5, and those who did not, Group 6) reported significant improvement. These data offer some support for Hypotheses 1 a. and 2, but not for Hypotheses 1 b. and 3.

Statistical analyses were not performed on these data because of the small and unequal sample sizes.

4.5 Subjects' Fulfillment of the Goal Setting Requirements

Since the present study was designed to minimize experimenter involvement in the subjects' implementation of the goal setting requirements, two questions were asked of the subjects after they had completed the posttest measures to assess whether or not they had fulfilled the expected behaviors of the goal group to which they were assigned (See Appendix B). Thirty-three of the 42 subjects did fulfill the expected behaviors. Nine did not. (See Table 4.9.) Fourteen people were assigned to set goals and self-observe (Groups 1 and 4). Twelve did so. Two did not self-observe: one did not because a close friend was dying during the six weeks and the subject's attention was focussed almost exclusively on the friend; the other did not because "things piled up in my personal life." Fourteen people were assigned to set goals (Groups 2 and 5). Eight did so. Six set goals plus spontaneously self-observed. Fourteen people were assigned

TABLE 4.9

Assigned and Performed Goal Setting Behaviors

| | | Performed | | | | | |
|----------|---|-----------|---|---|---|---|---|
| Group | | 1 | 2 | 3 | 4 | 5 | 6 |
| Assigned | 1 | 6 | | | | | |
| | 2 | 3 | 3 | | | | |
| | 3 | 1 | | 5 | | | |
| | 4 | | | | 6 | 2 | |
| | 5 | | | | 3 | 5 | |
| | 6 | | | | | | 8 |

Group 1 = Workshop, Goal plus self-observation

Group 2 = Workshop, Goal

Group 3 = Workshop, No goal

Group 4 = No workshop, Goal plus self-observation

Group 5 = No workshop, Goal

Group 6 = No workshop, No goal

to the no goals condition (Groups 3 and 6). Thirteen did not set goals. One spontaneously set a goal plus self-observed. Thus, seven of the nine subjects who did not fulfill the expected behaviors used more self-direction strategies than were asked of them.

In order to assess whether or not the nine subjects significantly influenced the results of the statistical analyses, their data were dropped and the remaining data were reanalyzed. See Tables 4.10, 4.11, 4.12, 4.13, and 4.14 for summaries of the results. The workshop effect on the Trait anxiety scale remained significant. However, the SOS mean frequency of symptom data no longer tended toward support of the hypothesis that goal setting produced more desirable behavior change than no goal setting. When one considers that seven of the nine subjects who were dropped had both set goals and self-observed instead of just setting goals (as instructed), the appropriate logical inference may be that the previous data tended to support the hypothesis that goal setting plus self-observation produces more desirable behavior change than does goal setting alone.

The practical significance data from the remaining 33 subjects are presented in Table 4.15, and are graphically displayed in Figure 4.2. The practical significance data support Hypothesis 1 a..

It is important to note that although the nine subjects did not fulfill the goal setting instructions, they did fulfill the workshop conditions. Thus it appears valid to

TABLE 4.10

Summary of Analysis of Covariance of STAI-State Scale
on 33 Remaining Subjects

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|---------|----------|-------------|
| Workshop | 1 | 9.590 | 0.152373 | 0.69960 |
| Goals | 2 | 18.914 | 0.300506 | 0.74309 |
| Interaction | 2 | 63.852 | 1.014480 | 0.37704 |
| Covariate | 1 | 540.557 | 8.588348 | 0.00713 |
| Errors | 25 | 62.941 | | |

TABLE 4.11

Summary of Analysis of Covariance of STAI-Trait Scale
on 33 Remaining Subjects

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|----------|-----------|-------------|
| Workshop | 1 | 87.775 | 4.883951 | 0.03649 * |
| Goals | 2 | 14.470 | 0.805160 | 0.45828 |
| Interaction | 2 | 8.337 | 0.463895 | 0.63414 |
| Covariate | 1 | 1221.608 | 67.972702 | 0.0 |
| Errors | 25 | 17.972 | | |

TABLE 4.12

Summary of Analysis of Covariance of SOS Number of Symptoms
on 33 Remaining Subjects

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|----------|-----------|-------------|
| Workshop | 1 | 113.335 | 0.730768 | 0.40076 |
| Goals | 2 | 294.879 | 1.901339 | 0.17035 |
| Interaction | 2 | 101.581 | 0.654984 | 0.52814 |
| Covariate | 1 | 5453.359 | 35.162537 | 0.00000 |
| Errors | 25 | 155.090 | | |

TABLE 4.13

Summary of Analysis of Covariance of SOS Mean Frequency
of Symptoms on 33 Remaining Subjects

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|-------|-----------|-------------|
| Workshop | 1 | 0.032 | 0.388469 | 0.53876 |
| Goals | 2 | 0.078 | 0.938200 | 0.40468 |
| Interaction | 2 | 0.053 | 0.632135 | 0.53974 |
| Covariate | 1 | 2.710 | 32.409775 | 0.00001 |
| Errors | 25 | 0.084 | | |

TABLE 4.14

Summary of Analysis of Covariance of GAS
on 33 Remaining Subjects

| Source | df | M.S. | F-Ratio | Probability |
|-------------|----|-------|----------|-------------|
| Workshop | 1 | 0.000 | 0.000462 | 0.98318 |
| Goals | 1 | 0.155 | 0.234547 | 0.63566 |
| Interaction | 1 | 0.754 | 1.143431 | 0.30302 |
| Covariate | 1 | 0.005 | 0.008274 | 0.92881 |
| Errors | 14 | 0.659 | | |

TABLE 4.15

Subjective Estimates of Change
of 33 Remaining Subjects

| | Goal + Self Obs. | | Explicit Goal | | No Goal | |
|-------------|---------------------|----|------------------|----|------------|----|
| | Yes | No | Yes | No | Yes | No |
| Workshop | 4 | 1 | 0 | 3 | 2 | 3 |
| No Workshop | 3 | 3 | 2 | 3 | 2 | 6 |

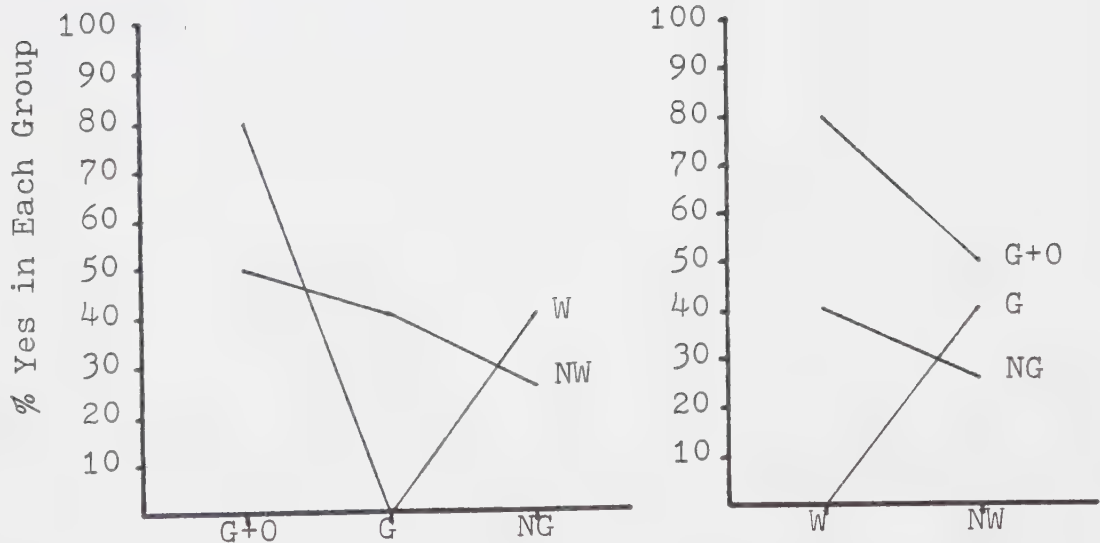


Figure 4.2 The percentage of subjects (the remaining 33) in each group who reported a significant improvement in their response to stress.

accept the practical significance data shown in Figure 4.1 in support of Hypothesis 2. There were no further noteworthy findings in the reanalyses of the data from the 33 subjects.

4.6 Summary of the Results

The data provided tentative support for two of the four research hypotheses. Hypothesis 1 a. was supported by subjects' reports of significant improvement in their responses to stress (See Figure 4.2). It also received inferential support from the change in the results of the SOS mean frequency data when the data were reanalyzed without the nine subjects (See Tables 4.6, 4.6a, and 4.13). The original data contained the data from two subjects who failed to self-observe, six goal setters who spontaneously self-observed, and one non-goal setter who spontaneously set a goal and self-observed. These data were originally interpreted as tentative support for Hypothesis 1 b. However, this tentative support disappeared when the data from the six spontaneous self-observers were deleted from the Explicit Goal group. Thus, it may be more correct to infer that the original data supported the efficacy of goal setting plus self-observation over goal setting alone or no goal setting.

In light of the data reanalysis discussed above, there appears to be no support for Hypothesis 1 b.

Hypothesis 2 was supported by the significant results of analysis of the STAI trait scale data (See Tables 4.4 and 4.13). Subjects who attended the stress management workshop reported significantly less trait anxiety at posttest than did subjects who did not attend the workshop. Hypothesis 2 was also supported by subjects' reports of significant improvement in their responses to stress (See Figure 4.1).

Hypothesis 3 was not supported.

In summary, this study provided some support for the hypothesis that explicit goal setting plus self-observation of behavior in relation to goals produces more, desirable behavior change than goal setting without self-observation or no goal setting. The study also provided support for the hypothesis that information in the content area of the goals produces more, desirable behavior change than no information.

4.7 Limitations of the Study

Three problems encountered in the study contributed to the tentative nature of the results. These problems are the small sample size, the reliability of the available dependent measures, and the difficulty in ensuring use of the designated self-direction strategies.

4.7.1 The Sample

The tentative support obtained from the relatively small samples used in the study suggests that larger samples would likely provide stronger support for Hypotheses 1 a. and 2. However, larger samples of adults from the non-clinical general population may be difficult to obtain. The experimenter experienced some difficulty in recruiting subjects and maintaining subjects' commitment to the study for six weeks. The study was designed to be as non-intrusive as possible, but the fact that subjects in Groups 1, 2, and 3 had to attend a workshop on a particular date (their choice) still accounted for the loss of six subjects.

A larger number of adult subjects might be obtained if cohorts of subjects were recruited over the course of a year and added to the treatment conditions over time. Another alternative with adult subjects might be a single subject design.

4.7.2 The Reliability of the Dependent Measures

The reliability of the dependent measures also contributed to the tentative results of the study. GAS was used both to set goals and to measure the degree of attainment of goals. Its interrater reliability is moderate. The SOS was used to obtain the number and frequency of symptoms experienced. Its reliability is unknown. The STAI was used because it had been found to correlate with the degree of attainment of goals, and because it is a well

standardized instrument which the researcher anticipated would correlate with the SOS. Its test-retest reliability is high.

These measures appeared to be the best available for the type of study which was being undertaken. However, the unknown accuracy of the SOS and the moderate accuracy of the GAS make it difficult to assess whether the general lack of support for the hypotheses was due to lack of effect or to inaccuracy of the measures.

Accuracy of measurement might be increased in future studies by limiting the population to those with a common, accurately measurable symptom, such as muscle tension, blood pressure, resting heart rate, irrational ideas, weight, cigarettes smoked, etc.

4.7.3 Self-direction Strategies As Functional Variables

The fact that a number of subjects performed different self-direction strategies than requested contributed to the tentative nature of the results and raises the issue of the difficulty encountered in manipulating components of the self-direction process. To the extent that goal setting and self-observation are considered to be self-direction variables, their manipulation must be relatively unintrusive. To the extent that the manipulation is intrusive, confounding factors of external direction (or control) must be considered in subsequent findings. The problem is that unintrusive variable manipulation provides

less control of the variables by the experimenter.

A recent study by Baron and Watters (1981) used more intrusive variable manipulation than the present study and still encountered difficulty in controlling the variables. Baron and Watters (1981) set three levels of caloric intake as goals (one level for each of three groups). They then had subjects self-observe, make a daily record of their caloric intake, and deliver their records weekly to the experimenter. Seventeen out of 41 subjects did not adopt the prescribed goal (either under- or over-shooting the goal). In addition, some subjects handed in as few as nine out of 28 daily record cards. Baron and Watters (1981) recommend a single-subject design introducing sequentially the various goal levels, as well as more experimenter intrusion in terms of phoning the subject. As discussed earlier, this writer suggests that experimenter intrusion introduces external control as a salient factor in the results.

One solution with adult subjects may be to enlist their informed consent to use only those strategies which are requested of them. In other words, it may be possible to enlist subjects' self-direction processes in support of the study by asking them to commit themselves to the use of particular strategies for the duration of the study. This approach might take the form of telling subjects that they will be taught a self-direction strategy and that they will be asked to commit themselves to the use of the strategy for a period of time in order to assess the relative

Reference Note

1. Leckie, M. S., & Thompson, E. Interpretation of the symptoms of stress checklist. Unpublished manuscript, 1979. (Available from Department of Psychosocial Nursing SC-76, University of Washington, Seattle, Washington 98195.

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APPENDIX A

INFORMATION, INSTRUCTIONS, AND MEASURES SENT TO SUBJECTS AT
PRETEST

September 18, 1981

Dear

I have attached an information package which is designed to enhance your success with stress management. Please complete the questionnaires during the week of September 21 to 25. It will take you approximately one hour. When you have finished, please check to make sure you have not missed any pages or questions. Then, return the questionnaires in the stamped addressed envelope.

In order to ensure that you remain anonymous, I have placed a code number on the top right hand corner of your questionnaires. The answers you provide will not be discussed in the workshop and will remain confidential. Your answers will give you information about how you respond to stress and will give me exact information about how your ability to cope with stress improves over the next few weeks.

It is very important that you do not discuss your answers or your set of questionnaires with other workshop participants.

If you have any questions, please call me, either at my home (433-5545), or at my office (432-3226).

Yours truly,



Penny Hayduk
Department of Educational Psychology
6th Floor, Education North
University of Alberta
Edmonton, Alberta

Developed by C. D. Spielberger, R. L. Gorsuch and R. Lushene

STAI FORM X-1

AGE _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *feel* right now, that is, *at this moment*. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

| | NOT AT ALL | SOMEWHAT | MODERATELY SO | VERY MUCH SO |
|--|------------|----------|---------------|--------------|
| 1. I feel calm | ① | ② | ③ | ④ |
| 2. I feel secure | ① | ② | ③ | ④ |
| 3. I am tense | ① | ② | ③ | ④ |
| 4. I am regretful | ① | ② | ③ | ④ |
| 5. I feel at ease | ① | ② | ③ | ④ |
| 6. I feel upset | ① | ② | ③ | ④ |
| 7. I am presently worrying over possible misfortunes | ① | ② | ③ | ④ |
| 8. I feel rested | ① | ② | ③ | ④ |
| 9. I feel anxious | ① | ② | ③ | ④ |
| 10. I feel comfortable | ① | ② | ③ | ④ |
| 11. I feel self-confident | ① | ② | ③ | ④ |
| 12. I feel nervous | ① | ② | ③ | ④ |
| 13. I am jittery | ① | ② | ③ | ④ |
| 14. I feel "high strung" | ① | ② | ③ | ④ |
| 15. I am relaxed | ① | ② | ③ | ④ |
| 16. I feel content | ① | ② | ③ | ④ |
| 17. I am worried | ① | ② | ③ | ④ |
| 18. I feel over-excited and "rattled" | ① | ② | ③ | ④ |
| 19. I feel joyful | ① | ② | ③ | ④ |
| 20. I feel pleasant | ① | ② | ③ | ④ |



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SELF-EVALUATION QUESTIONNAIRE
STAI FORM X-2

AGE _____ DATE _____

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then blacken in the appropriate circle to the right of the statement to indicate how you *generally* feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

| | ALMOST NEVER | SOMETIMES | OFTEN | ALMOST ALWAYS |
|--|--------------|-----------|-------|---------------|
| 21. I feel pleasant | ① | ② | ③ | ④ |
| 22. I tire quickly | ① | ② | ③ | ④ |
| 23. I feel like crying | ① | ② | ③ | ④ |
| 24. I wish I could be as happy as others seem to be | ① | ② | ③ | ④ |
| 25. I am losing out on things because I can't make up my mind soon enough | ① | ② | ③ | ④ |
| 26. I feel rested | ① | ② | ③ | ④ |
| 27. I am "calm, cool, and collected" | ① | ② | ③ | ④ |
| 28. I feel that difficulties are piling up so that I cannot overcome them | ① | ② | ③ | ④ |
| 29. I worry too much over something that really doesn't matter | ① | ② | ③ | ④ |
| 30. I am happy | ① | ② | ③ | ④ |
| 31. I am inclined to take things hard | ① | ② | ③ | ④ |
| 32. I lack self-confidence | ① | ② | ③ | ④ |
| 33. I feel secure | ① | ② | ③ | ④ |
| 34. I try to avoid facing a crisis or difficulty | ① | ② | ③ | ④ |
| 35. I feel blue | ① | ② | ③ | ④ |
| 36. I am content | ① | ② | ③ | ④ |
| 37. Some unimportant thought runs through my mind and bothers me | ① | ② | ③ | ④ |
| 38. I take disappointments so keenly that I can't put them out of my mind | ① | ② | ③ | ④ |
| 39. I am a steady person | ① | ② | ③ | ④ |
| 40. I get in a state of tension or turmoil as I think over my recent concerns and interests | ① | ② | ③ | ④ |

This questionnaire is adapted in part from the Cornell Medical Index, 1949. It may not be copied or reproduced without first obtaining permission from Maxine S. Leckie or Elaine Thompson.

Department of Psychosocial Nursing SC-76
University of Washington
Seattle, Washington 98195

SYMPTOMS OF STRESS INVENTORY

A Self Assessment

THIS QUESTIONNAIRE IS DESIGNED TO MEASURE THE DIFFERENT WAYS PEOPLE RESPOND TO STRESSFUL SITUATIONS. IN THE BOOK ARE SETS OF QUESTIONS DEALING WITH VARIOUS PHYSICAL, PSYCHOLOGICAL AND BEHAVIORAL RESPONSES. WE ARE PARTICULARLY INTERESTED IN THE FREQUENCY WITH WHICH YOU MAY HAVE EXPERIENCED THESE STRESS RELATED SYMPTOMS DURING THE PAST 2 WEEKS.

DEPARTMENT OF PSYCHOSOCIAL NURSING
UNIVERSITY OF WASHINGTON

PLEASE CIRCLE THE MOST APPROPRIATE RESPONSE TO EACH QUESTION.

SOMETIMES PEOPLE UNDER STRESS EXPERIENCE A VARIETY OF PHYSICAL RESPONSES. DURING THE DESIGNATED PERIOD HAVE YOU BEEN BOTHERED BY:

| | Never | Infrequently | Sometimes | Often | Very Frequently |
|--|-------|--------------|-----------|-------|-----------------|
| 1. Flushing of your face..... | 0 | 1 | 2 | 3 | 4 |
| 2. Sweating excessively even in cold weather | 0 | 1 | 2 | 3 | 4 |
| 3. Severe itching..... | 0 | 1 | 2 | 3 | 4 |
| 4. Skin rashes | 0 | 1 | 2 | 3 | 4 |
| 5. Breaking out in cold sweats | 0 | 1 | 2 | 3 | 4 |
| 6. Cold hands or feet | 0 | 1 | 2 | 3 | 4 |
| 7. Hot or cold spells | 0 | 1 | 2 | 3 | 4 |

HAVE YOU NOTICED ANY OF THE FOLLOWING SYMPTOMS WHEN NOT EXERCISING:

| | | | | | |
|---------------------------------------|---|---|---|---|---|
| 8. Pains in your heart or chest | 0 | 1 | 2 | 3 | 4 |
| 9. Thumping of your heart | 0 | 1 | 2 | 3 | 4 |
| 10. Rapid or racing heart beats | 0 | 1 | 2 | 3 | 4 |
| 11. Irregular heart beats | 0 | 1 | 2 | 3 | 4 |
| 12. Rapid breathing | 0 | 1 | 2 | 3 | 4 |
| 13. Difficult breathing | 0 | 1 | 2 | 3 | 4 |

HAVE YOU EXPERIENCED:

| | | | | | |
|---------------------------------------|---|---|---|---|---|
| 14. A dry mouth | 0 | 1 | 2 | 3 | 4 |
| 15. Having to clear your throat often | 0 | 1 | 2 | 3 | 4 |

| | | | | | |
|---|---|---|---|---|---|
| 16. A choking lump in your throat | 0 | 1 | 2 | 3 | 4 |
| 17. Hoarseness | 0 | 1 | 2 | 3 | 4 |
| 18. Nasal stuffiness | 0 | 1 | 2 | 3 | 4 |
| 19. Colds | 0 | 1 | 2 | 3 | 4 |
| 20. Colds with complications (e.g. bronchitis)..... | 0 | 1 | 2 | 3 | 4 |
| 21. Increased asthma attacks | 0 | 1 | 2 | 3 | 4 |

HAVE YOU EXPERIENCED:

| | | | | | |
|--------------------------------------|---|---|---|---|---|
| 22. Spells of severe dizziness | 0 | 1 | 2 | 3 | 4 |
| 23. Feeling faint | 0 | 1 | 2 | 3 | 4 |
| 24. Blurring of your vision | 0 | 1 | 2 | 3 | 4 |
| 25. Migraine headaches | 0 | 1 | 2 | 3 | 4 |
| 26. Tension headaches | 0 | 1 | 2 | 3 | 4 |
| 27. Sinus headaches | 0 | 1 | 2 | 3 | 4 |
| 28. Increased seizures (convulsions) | 0 | 1 | 2 | 3 | 4 |

HAVE YOU BEEN BOTHERED BY:

| | | | | | |
|-------------------------------------|---|---|---|---|---|
| 29. Indigestion | 0 | 1 | 2 | 3 | 4 |
| 30. Nausea | 0 | 1 | 2 | 3 | 4 |
| 31. Severe pains in your stomach .. | 0 | 1 | 2 | 3 | 4 |
| 32. Increased appetite | 0 | 1 | 2 | 3 | 4 |
| 33. Poor appetite | 0 | 1 | 2 | 3 | 4 |

| | Never | Infrequently | Sometimes | Often | Very Frequently |
|---|-------|--------------|-----------|-------|-----------------|
| 34. Loose bowel movements or diarrhea | 0 | 1 | 2 | 3 | 4 |
| 35. Heartburn | 0 | 1 | 2 | 3 | 4 |
| 36. Constipation | 0 | 1 | 2 | 3 | 4 |

MUSCLE TENSION IS A COMMON WAY OF EXPERIENCING STRESS. HAVE YOU NOTICED EXCESSIVE TENSION, STIFFNESS, SORENESS OR CRAMPING OF THE MUSCLES IN YOUR:

| | | | | | |
|------------------------------|---|---|---|---|---|
| 37. Neck | 0 | 1 | 2 | 3 | 4 |
| 38. Jaw | 0 | 1 | 2 | 3 | 4 |
| 39. Forehead | 0 | 1 | 2 | 3 | 4 |
| 40. Eyes | 0 | 1 | 2 | 3 | 4 |
| 41. Back | 0 | 1 | 2 | 3 | 4 |
| 42. Shoulders | 0 | 1 | 2 | 3 | 4 |
| 43. Hands or arms | 0 | 1 | 2 | 3 | 4 |
| 44. Legs | 0 | 1 | 2 | 3 | 4 |
| 45. Abdomen or stomach | 0 | 1 | 2 | 3 | 4 |

IN YOUR DAY-TO-DAY ACTIVITIES, HAVE YOU NOTICED SYMPTOMS OF ANXIETY OR RESTLESSNESS, SUCH AS:

| | | | | | |
|-------------------------------------|---|---|---|---|---|
| 46. Fidgeting with your hands | 0 | 1 | 2 | 3 | 4 |
| 47. Pacing | 0 | 1 | 2 | 3 | 4 |
| 48. Chewing on your lips | 0 | 1 | 2 | 3 | 4 |

| | Never | Infrequently | Sometimes | Often | Very Frequently |
|---|-------|--------------|-----------|-------|-----------------|
| 49. Difficulty sitting still | 0 | 1 | 2 | 3 | 4 |
| 50. Increased eating | 0 | 1 | 2 | 3 | 4 |
| 51. Increased smoking | 0 | 1 | 2 | 3 | 4 |
| 52. Biting your nails | 0 | 1 | 2 | 3 | 4 |
| 53. Having to urinate frequently ... | 0 | 1 | 2 | 3 | 4 |
| 54. Having to get up at night to urinate | 0 | 1 | 2 | 3 | 4 |
| 55. Difficulty in falling asleep ... | 0 | 1 | 2 | 3 | 4 |
| 56. Difficulty in staying asleep at night | 0 | 1 | 2 | 3 | 4 |
| 57. Early morning awakening | 0 | 1 | 2 | 3 | 4 |
| 58. Changes in your sexual relationship | 0 | 1 | 2 | 3 | 4 |

HAVE YOU NOTICED:

| | | | | | |
|--------------------------------------|---|---|---|---|---|
| 59. Worrying about your health | 0 | 1 | 2 | 3 | 4 |
| 60. Stuttering or stammering | 0 | 1 | 2 | 3 | 4 |
| 61. Shaking or trembling | 0 | 1 | 2 | 3 | 4 |
| 62. Being keyed up and jittery | 0 | 1 | 2 | 3 | 4 |
| 63. Feeling weak and faint | 0 | 1 | 2 | 3 | 4 |
| 64. Frightening dreams | 0 | 1 | 2 | 3 | 4 |
| 65. Being uneasy and apprehensive .. | 0 | 1 | 2 | 3 | 4 |

STRESS IS OFTEN ACCOMPANIED BY A VARIETY
OF EMOTIONS. DURING THE DESIGNATED
PERIOD HAVE YOU FELT:

| | Never | Infrequently | Sometimes | Often | Very Frequently |
|-------------------------------------|-------|--------------|-----------|-------|--------------------|
| 66. Alone and sad | 0 | 1 | 2 | 3 | 4 |
| 67. Unhappy and depressed | 0 | 1 | 2 | 3 | 4 |
| 68. Like crying easily | 0 | 1 | 2 | 3 | 4 |
| 69. Like life is entirely hopeless. | 0 | 1 | 2 | 3 | 4 |
| 70. That you wished you were dead . | 0 | 1 | 2 | 3 | 4 |
| 71. That worrying gets you down ... | 0 | 1 | 2 | 3 | 4 |

DOES IT SEEM:

| | | | | | |
|---|---|---|---|---|---|
| 72. That little things get on your nerves | 0 | 1 | 2 | 3 | 4 |
| 73. You are easily annoyed and irritated | 0 | 1 | 2 | 3 | 4 |
| 74. When you feel angry, you act angrily toward most everything. | 0 | 1 | 2 | 3 | 4 |
| 75. Angry thoughts about an irritating event keep bothering you | 0 | 1 | 2 | 3 | 4 |
| 76. You become mad or angry easily. | 0 | 1 | 2 | 3 | 4 |
| 77. Your anger is so great that you want to strike something .. | 0 | 1 | 2 | 3 | 4 |
| 78. You let little annoyances build up until you just explode | 0 | 1 | 2 | 3 | 4 |
| 79. You become so upset that you hit something | 0 | 1 | 2 | 3 | 4 |

IN YOUR DAY-TO-DAY LIVING DO YOU FIND:

| | Never | Infrequently | Sometimes | Often | Very Frequently |
|--|-------|--------------|-----------|-------|--------------------|
| 80. Working tires you out completely | 0 | 1 | 2 | 3 | 4 |
| 81. Severe aches and pains make it difficult for you to do your work | 0 | 1 | 2 | 3 | 4 |
| 82. You get up tired and exhausted in the morning even with your usual amount of sleep | 0 | 1 | 2 | 3 | 4 |
| 83. You suffer from severe nervous exhaustion | 0 | 1 | 2 | 3 | 4 |
| 84. You get nervous and shaky when approached by a superior | 0 | 1 | 2 | 3 | 4 |
| 85. Your thinking gets completely mixed up when you have to do things quickly | 0 | 1 | 2 | 3 | 4 |
| 86. You become so afraid you can't move | 0 | 1 | 2 | 3 | 4 |
| 87. You must do things very slowly to do them without mistakes | 0 | 1 | 2 | 3 | 4 |
| 88. You get directions and orders wrong | 0 | 1 | 2 | 3 | 4 |
| 89. You are unable to keep thoughts from running through your mind . | 0 | 1 | 2 | 3 | 4 |
| 90. You are fearful of strangers and/or strange places make you afraid | 0 | 1 | 2 | 3 | 4 |
| 91. Sudden noises make you jump or shake | 0 | 1 | 2 | 3 | 4 |

| | Never | Infrequently | Sometimes | Often | Very Frequently |
|---|-------|--------------|-----------|-------|--------------------|
| 92. Frightening thoughts keep coming back | 0 | 1 | 2 | 3 | 4 |
| 93. You become suddenly frightened for no good reason | 0 | 1 | 2 | 3 | 4 |
| 94. You have difficulty in concentrating | 0 | 1 | 2 | 3 | 4 |
| 95. What other ways do you experience stress, tension or anxiety? | | | | | |

GOALS

This section is designed to help you specify a goal related to your experience of stress. Please follow the directions given below.

1. From the Symptoms of Stress Inventory, which you just completed, choose one or two symptoms which you rated higher than other symptoms.

Examples: a) Item No. 42 muscle tension in the "Shoulders"

b) Item No. 76 "You become mad or angry easily."

c) Item No. 55 "Difficulty in falling asleep."

Please write the item you choose in space 1. on the next page.

2. Now, set a general goal which is the opposite of the symptom you identified.

Examples: a) If I chose the symptom "muscle tension in the shoulders", I could set the general goal "Feeling relaxed in the shoulders."

b) If I chose "You become mad or angry easily", I could set the general goal "Feeling calm".

Please write your general goal in space 2. on the next page.

3. Space 3. on the next page contains a scale of five numbers, from -2 to +2.

- i) Below +2 write a specific description of the most favourable outcome you can imagine in relation to your general goal.

Example: General Goal: Feeling relaxed in the shoulders.

| | | | | |
|----|----|---|----|---|
| -2 | -1 | 0 | +1 | +2 |
| | | | | experiencing no tension or pain. feeling totally comfortable and relaxed. |

- ii) Below -2 write a specific description of the least favourable outcome you can imagine in relation to your general goal.

Example: General Goal: Feeling relaxed in the shoulders.

| | | | | |
|----|----|---|----|--|
| -2 | -1 | 0 | +1 | +2 |
| | | | | experiencing tension & pain all of the time. |

- iii) Below 0 write a specific description of how you expect to be in six weeks in relation to your general goal.

Example: General Goal: Feeling relaxed in the shoulders.

| | | | | |
|----|----|---|----|---|
| -2 | -1 | 0 | +1 | +2 |
| | | | | tense, painful shoulders 1/day otherwise comfortable |

- iv) Write a specific description below -1 and +1.

Example: General Goal: Feeling relaxed in the shoulders.

| | | | | | |
|----|----|---|----|---|-----------------------------------|
| -2 | -1 | 0 | +1 | +2 | |
| | | | | tense, painful $\frac{1}{2}$ of each day | totally relaxed 3 days/week |

4. Place an X in the space provided above the scale to show where you are now.

Example:

| | | | | |
|----|----|---|----|----|
| -2 | -1 | 0 | +1 | +2 |
| | X | | | |

COPING WITH STRESS WORKSHOP INFORMATION

You are registered in the Coping With Stress workshop:

Date: November 7 and 8, 1981

Time: 9 a.m. to 4:30 p.m.

Place: Gold Room, Lister Hall, 116 Street and 87 Avenue
(Immediately west of the Jubilee Auditorium)

Parking: Free parking is available at the Jubilee Auditorium
and at Stadium Car Park (116 Street and 86 Avenue)

Coffee: Morning and afternoon coffee, tea, and water are
included.

Lunch: You may either bring your lunch, or purchase it in
the Lister Hall cafeteria

Bring: Writing material for notes you may wish to take.

Wear: Comfortable clothing.

See You There!

COPING WITH STRESS WORKSHOP INFORMATION

You are registered in the Coping With Stress workshop:

Date: September 26 and 27, 1981

Time: 9 a.m. to 4:30 p.m.

Place: Gold Room, Lister Hall, 116 Street and 87 Avenue
(Immediately west of the Jubilee Auditorium)

Parking: Free parking is available at the Jubilee Auditorium
and at Stadium Car Park (116 Street and 86 Avenue)

Coffee: Morning and afternoon coffee, tea, and water are
included.

Lunch: You may either bring your lunch, or purchase it in
the Lister Hall cafeteria

Bring: Writing material for notes you may wish to take.

Wear: Comfortable clothing.

See You There!

APPENDIX B

INFORMATION, AND INSTRUCTIONS SENT TO SUBJECTS AT POSTTEST

October 30, 1981

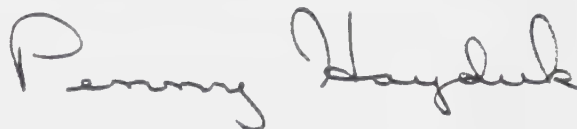
Dear

I have attached the final set of questionnaires. Please complete the questionnaires during the week of November 2 to 6. When you have finished, please check to make sure you have answered all the questions. Then, return the questionnaires in the stamped addressed envelope. As before, your answers are completely confidential.

If you have any questions, please call me, either at my home (433-5545), or at my office (432-3226).

Thank you, again, for having participated in this study.

Yours truly,



Penny Hayduk
Department of Educational Psychology
6th Floor, Education North
University of Alberta
Edmonton, Alberta

GOAL

Please make a check (✓) on your goal scale (next page) to indicate where you are now.

SIGNIFICANT FACTORS QUESTIONNAIRE

1. Did you set a goal related to your experience of stress? Yes No
2. If "Yes", did you regularly compare your behavior to your goal? Yes No
If "Yes", approximately how often? _____
3. Did your response to stress (i.e. how you respond to stress) improve significantly over the past six weeks? Yes No
Please elaborate, if possible.
4. What factors, in your estimation, significantly influenced your stress response?

APPENDIX C

WORKSHOP OUTLINE

Introduction

- Introduce Self

- Themes

- Participant Information

- Holmes Rahe Scale

What Stress Is, and What It Is not

- Stereotypic Psychobiological Response

- Characteristics of Excess Stress

- Responsibility for Stressors

- Identifying and Monitoring One's Own Experience of

Stress

- Effects of Excess Stress

Coping Strategies

- Common Coping Strategies

- Stress Immunization Procedures

- Fitness

- Relaxation

Specific Strategies

Cognitive Stress Management Techniques

Physical Stress Management Techniques

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